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Volume of Inquiry Is Maintained

Fair Amount of Buying, Firm Prices and Presence of New Inquiries Characterize Market—Rail Bookings for 1924 Estimated at 350,000 Tons—Introduction of Short Workday Progressing Rapidly

WITH the three-shift system actually in force in many furnaces and mills, the time is not far distant when the effects of the change will be known. In a number of instances the introduction of the short turn during the past week has been accompanied by sporadic walkouts and other interruptions to operations owing to misunderstandings. Until the temporary confusion due to the sudden change dies out, it will be impossible to obtain a fair idea of normal conditions under the new system.

Likewise, it will be difficult to trace the influence of the short day on the iron and steel market until producers have had a chance to compare actual operating costs. In 10 European open-hearth plants, the change from two to three shifts resulted in an increase of production of about 7 per cent, but there also was a sharp decrease in the output per man per day and a large increase in the cost per ton.

In view of this uncertainty, the present encouraging volume of inquiries cannot definitely be attributed to the introduction of the abbreviated workday. While the volume of sales is only slightly above that of the early weeks of August, the increasing flow of inquiries points to a period of heavier buying during September. This view also is strengthened by the fact prices of pig iron, scrap and finished steel are firm.

More interest is being shown in the pig iron market as the fourth quarter approaches. Reported sales for the week approach the 50,000-ton mark while new inquiry received in that period involves more than 60,000 tons. This latter figure includes an inquiry of 5000 tons of basic iron from a valley steelmaker.

Prices Are Firmer

IRON TRADE REVIEW composite of fourteen leading iron and steel products this week is $44.84, the same as last week, several minor fluctuations in pig iron prices cancelling each other. This apparent halting of the slow downward trend in the composite follows a decline of only 4 cents, reported last week.

Spot furnace coke is firm at $4.75, Connellsville ovens, and production is being maintained at the rate of about a quarter of a million tons weekly. While scrap buying still is limited, better inquiry and the removal of embargoes has had an encouraging influence, resulting in slight price revisions upward.

Railroads Are Buying

Evidence of heavier railroad buying is found in the transactions of the past week. It is estimated four western roads bought 68,000 tons of rails in the East and inquiries for 40,000 tons are current. It is believed more than 350,000 tons of rails have been booked for 1924 delivery. The Canadian National railways awarded contracts for 1000 box cars, the New York Central railroad has let the contract for repairing 700 box cars and the Chesapeake & Ohio has awarded the repairs for 1500 cars. Announced purchases of locomotives are limited to several lists of one or two items each, but it is understood two of the leading eastern roads have quietly placed large orders for locomotives.

Awards of structural steel during the week totaled 15,163 tons as against 18,818 tons last week. Among the contracts placed were those for 1500 tons for a New York city school, 2600 tons for spans for the Chicago, Rock Island & Pacific railroad, 2000 tons for a Los Angeles power house, 1500 tons for boiler houses for the Standard Oil Co. in Cleveland, and 1130 tons for a boiler house in Oklahoma.

Refining interests are seeking plates for storage tanks, inquiries for 60,000 tons for this purpose being current in Chicago. Steel bars are in fair demand, with prices firm at 2.40c, Pittsburgh. A revised list of rivet extras is being issued, effective Sept. 1 and new lists for bolts and nuts are expected to follow. These revisions are in accordance with the recent increase in bar extras.

Purchase Iron Abroad

American buying of British iron and European semifinished material has been resumed on a small scale. An eastern purchaser has taken 2000 tons of Luxemburg basic bessemer billets at the equivalent of $30.48, f.o.b. Antwerp. IRON TRADE REVIEW weekly cable reports strikes are widespread in the Ruhr, but mob violence is dying down. German pig iron is quoted at 100,000,000 marks per ton. Freight rates have increased 2000 per cent.

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Pig Iron Price Trend Firmer

Buyers Show More Interest in Market as Fourth Quarter Approaches, Though Volume of usiness Still Is Light—Basic Tonnages Closed at $25, Valley—Inquiry Pending for 5000 Tons More

PITTSBURGH, Aug. 21.—Trading in the pig iron market this week continues restricted to small lots. The appearance of a 5000-ton inquiry for basic iron, however, has tended to arouse some interest in the market which has been of a backward character for many weeks. The request for this tonnage comes from the Sharon Steel Hoop Co. which recently has been a quiet purchaser of several thousand tons. As far as can be learned $25 valley has been the minimum of quotations submitted. The outcome of this transaction is awaited with interest by the trade in view of the firmness of the $25 basic price which has been under test on two occasions since the beginning of this month. No sales of basic are heard in this district this week although the price of $25, valley, is reported firm all around. Demand for bessemer iron has not broadened to any noticeable extent and about the only transaction in the limelight entailed carload lots. A consumer of bessemer metal who operates a foundry in conjunction with his fabricating and machine shop bought a carload this week at $26.50, valley. At the moment this figure appears to be the minimum quotation on this grade. Only odd lots are in demand. Interest in the foundry grade also is lacking and outside of a few inquiries for carload quantities sellers have little tonnage upon which to quote. Producers are asking $26, valley. Malleable sales in this district last week totaled in excess of 1000 tons about 500 having been purchased by the Fort Pitt Malleable Casting Co. for September delivery. The sale involved a price of $24.50, valley. Low phosphorus iron sales are comparatively few and are still held in small sized lots. Makers are asking $32 valley on this grade, which is a recession of $2 from the price which prevailed recently. The Machined Steel Casting Co., Alliance, O., bought a round tonnage of low phosphorus copper free iron last week at a delivered price slightly in excess of the valley quotation. Last week the Youngstown Sheet & Tube Co. blew out its two Hubbard stacks while the merchant stack of the Clinton Iron & Steel Co., Pittsburgh, also was placed on the inactive list.

New England Market Dull

Boston, Aug. 21.—Few sales of pig iron were made in the past week, the total being around 2500 tons. It is understood that the Sullivan Machinery Co., Claremont, N. H., has placed an order for 300 tons. A Connecticut consumer has purchased 300 tons of eastern Pennsylvania iron of a local dealer. Sales of Buffalo No. 2X were made at $30.41, delivered to Boston, and sales of eastern Pennsylvania No. 2X (2.25 to 2.75 per cent silicon) were closed at $29.65, delivered. There are rumors that a price of $28.25, delivered, for the base grade of eastern Pennsylvania iron was quoted, but no sales are reported at that figure. Fifty-cent differentials prevailed on eastern Pennsylvania and Buffalo iron. The trade is interested in the announcement that interests identified with the Massachusetts gas companies are planning to organize a company to produce pig iron for the New England market with a plant at Everett, Mass. The company is to be known as the Mystic Iron Works. The proposition will involve an investment of $3,000,000 to $4,000,000. The coke works of the New England Coal & Coke Co. are contiguous to the site of the proposed blast furnaces.

Eastern Market Less Active

New York, Aug. 21.—Though inquiries totaling 3000 to 4000 tons of foundry iron in small lots and for 2000 tons of basic are before the trade, the market here continues less active. However, the melt is increasing, foundries are taking more iron and two steelmakers have put on more furnaces and are asking that their shipments be anticipated. A local buyer is inquiring for 1500 tons of foundry for fairly nearby delivery and a New Jersey consumer wants 400 tons for fourth quarter. As a general statement inquiry at present is divided about equally between fairly prompt delivery and contracts for the remainder of the year. Producers face the fourth quarter with much uncertainty as to the fuel situation and general costs and are not anxious to sell too heavily into the winter, preferring to take current tonnages. Prices are steady at $25, base furnace, with 50-cent silicon differentials. This applies to Buffalo and Pennsylvania irons. Production continues in excess of demand, though the latter is picking up in a general way. An inquiry for 2000 tons of basic for the Gould Coupler Co., Depew, N. Y., is before the market and probably will be closed soon. It is likely to be closed with a Buffalo producer.

Sales Total 20,000 Tons

Cleveland, Aug. 21.—A better situation is developing in the pig iron market, though the improvement still is slow and as represented by actual transactions in the past week not greatly changed from the week preceding. Sales totaled around 20,000 tons by all interests represented in the northern Ohio group. Many buyers are sounding out the market; some users are running out of iron; there are indications of an increase in the melt, which with continued reduction in furnace output is the cause of more hopefulness on the part of sellers. Generally speaking buying still is on a hand-to-mouth basis, though a few good tonnages have been closed for delivery over the remainder of the year. It develops that several tonnages reported as closed a week ago were placed by one consumer with three concerns, the total amounting to 8000 tons, all malleable. Another lot of 5000 tons of malleable has been split among various makers. A Warren, O., user who had out an inquiry for 2000 tons of malleable failed to close with one interest which quoted $25 valley. A lake furnace interest booked 10,000 tons of pig iron in the week; another around 5000 tons, of which about 3000 tons is for delivery in Cleveland and vicinity. A northern Ohio merchant interest took 5000 tons of foundry iron, and in addition a good tonnage of basic iron. The price reported done on the basic iron was $25, valley. The foundry iron for Cleveland delivery went at $26, furnace, or $26.50, delivered. Other lake producers are quoting $26, furnace, while the valley price is $25 and no sales under that figure have been reported in the week. Inquiry pending totals 10,000 tons of various grades.

Larger Inquiry Noted

Buffalo, Aug. 21.—Inquiry for pig iron in the past week was larger than for some time, totaling 20,000 tons. A sizable portion came from districts outside Buffalo, which ordinarily buy elsewhere. Among the individual inquiries was one for 2000 tons of foundry iron and another for 1500 tons, both from outside. Another outside inquiry was for 3000 tons of foundry. Other inquiries range from 200 to 600 tons. One interest sold about 50,000 tons in July and approximately 23,000 tons thus far in August. Aggregate selling for the past week is estimated at 7000 to 8000 tons. Makers of automobile castings and railway supply houses are very busy and are going to continue so. The general jobbing business is good. If the agricultural implement makers could speed up, producers say the industry would be 100 per cent active. The base price continues at $25, furnace.

Sales Few and Small

Cincinnati, Aug. 21.—Exceptionally quiet conditions have been reflected in the pig iron market in this territory during the past week. Sales have been small. New inquiries also are small. Spot buying of carloads to fill immediate needs is the outstanding feature. The aggregate volume of business in northern iron is about on a par with production, as only three merchant furnaces are in blast in the southern Ohio district. A few have booked a little business for the fourth quarter. Practically all producers in this district are in a position to take on more business for delivery in this quarter. While the southern Ohio market is quotable at $26, Ironton base, $25 can be done with at least two furnaces on fair tonnages. The southern market ranges from $23.50 to $27, Birmingham base, although $24 will be accepted by a majority of the Alabama furnaces. The $23.50 quotation applies to the prod-

uct of Tennessee furnaces. Insistence on delivery continues and suspensions are absent due to the lack of stocks at furnaces and foundries. This indicates buying will be necessary in the near future. Practically no inquiries of consequence are on hand. The Jaeger Machine Co., Columbus, O., which inquired for 300 tons of northern iron has postponed buying until next month. Inquiries for carlots aggregating 800 tons of northern iron have been received by a leading producer. The American Steel Foundry Co., Chicago, is negotiating for 500 tons of low-phosphorus iron for September and October.

Good Sales at Chicago

Chicago, Aug. 21.—Pig iron sales in August already are ahead of the total for July. The total tonnage in the past week is equal to that of the previous week. All sellers hold northern iron firm at $27. Resale southern iron has been sold at $23, furnace, or $29 delivered. Current sales include 1500 tons of foundry iron to an Illinois consumer, 1000 tons of malleable and several thousand tons of foundry iron. Inquiry is out for 1000 tons of basic iron; 1000 tons of malleable; 1000 tons of low phosphorus and 1500 tons of 15 per cent bessemer ferrosilicon iron. Charcoal iron is firm at $32.04, Chicago. Sales total 500 tons. Silveries are stronger. Electrolytic plants are down on account of a lower water stage. Several Jackson county furnaces are out. The price is unchanged.

Improvement Is Slow

St. Louis, Aug. 20.—Continued slight improvement in inquiry and sales features the market for pig iron in this district. A large part of the business is for prompt shipment. Producers and selling agencies report they are being pressed for shipments. Many melters who anticipated a slump in new orders for their products during late July and early August have been disappointed, and the new business they have done has necessitated prompt material to fill in with. The chief reason for postponing quantity purchases is uncertainty relative to prices. Stocks at Birmingham furnaces have increased from around 34,500 tons on June 1 to approximately 74,000 tons on Aug. 1. While the latter tonnage is not particularly bulky for Birmingham, it represents a very rapid rate of accumulation, which if continued will place the stacks in a position of urgently needing business. Opinion is radically divided as to the future of the market, but sentiment has veered decidedly to greater optimism. For this reason sellers are looking for a break in the deadlock by the middle of September, if not sooner. The largest single sale reported last week was 1000 tons of foundry iron to an Iowa melter for delivery during fourth quarter or earlier. The interest making this sale also reports the sale of 250 tons to a broker and 100 tons to a local foundry, also scattered small tonnages aggregating several hundred tons, all for prompt delivery. The leading local producer has disposed of 500 tons, all in small lots, except 175 tons to a St. Louis machinery builder. Other sales reported will bring the total close to 5500 tons. Inquiries reported total about 2200 tons, and include 400 to 500

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Coke Firmness Persists

Best Spot Furnace Fuel Bringing $4.75—Business Still in Light Volume—Some Interest in Fourth Quarter

COKE PRICES, PAGE 501

Pittsburgh, Aug. 21.—Firmness of prices is predominant in the coke market. The best brands of spot furnace fuel are bringing $4.75, ovens, although not much expansion in the volume of business is apparent. Medium sulphur coke still is available at $4.50, ovens, although the price tendency is upward. One inquiry in the market entailed a carload daily through September and this prospective purchaser is endeavoring to obtain the coke at around $4.50, ovens. While some interest is taken in next quarter contract requirements there is no rush. One important furnace operator has closed on his requirements for the last three months at a price reported to be $4.75, ovens. Some operators have expressed their willingness to consider $5.50, ovens, on fourth quarter requirements. One seller is willing to name $5, ovens, on contract furnace coke over the remainder of the year but reports little headway in finding a purchaser. Demand for spot foundry coke has not expanded. One or two carloads represent individual transactions. For the well-known brands purchasers are paying $5.75, ovens, although where strict analysis is not important tonnage can be bought from $5.25 upward. Few foundrymen are showing interest in fourth quarter tonnage at present. Producers' ideas of the contract market at present range from $5.50 to $6, ovens. Some producers note a slightly better demand from eastern foundries and several consumers in that district are asking for tonnage in addition to that now being delivered on contracts. Production, according to the *Connellsville Courier*, for the week ended Aug. 11 was 266,430 tons as compared with 266,840 tons the preceding week.

No Improvement In South

Birmingham, Ala., Aug. 20.—The coke market in the Birmingham district continues weak. Little new business is coming in the average price for beehive and by-product coke is $8.

Market Is Firmer

Cincinnati, O., Aug. 21.—The trend of prices on Connellsville coke has been slightly firmer, with an advance of 25 cents a ton on certain brands. Demand for domestic coke continues strong while the movement of Connellsville foundry coke has shown considerable improvement in the past week. Carlot buying for prompt delivery is the feature, although an inquiry for 250 tons of Connellsville foundry coke for fourth quarter delivery has been received from a Detroit user. A sale of five cars of Wise county foundry coke to a central Ohio user is noted. A leading seller closed for several cars of New River foundry coke for users in this district. Sellers say the coke situation generally is much stronger than a week ago. Little activity is noted in Pocahontas coke, although prices retain their firmness. The foundry grade is quoted at $8.50, ovens, and the furnace fuel $7.50, ovens. By-product ovens report satisfactory shipments. Sellers express the opinion that business is being hampered by the refusal of producers to quote beyond Sept. 1.

Coke Prices Stiffening

New York, Aug. 21.—Demand for foundry and furnace coke is increasing steadily and delivery is becoming somewhat extended on particular brands of Connellsville fuel. Where it had been possible to obtain two to three days delivery for some time past, it frequently happens now that on particular brands ten days to two weeks is the best that can be done. Some stiffening of prices is noted as makers add to their order books. The minimum on foundry coke now appears to be $5.75 and the maximum $7.25, Connellsville, while furnace coke ranges from $4.50 to $5.50, Connellsville. On contracts for later delivery somewhat higher prices are made occasionally. Seaboard by-product foundry coke is steady at $11.41, delivered, Newark, and northern New Jersey. This producer is booked comfortably almost to the end of the present year. Increase in the foundry melt is being reflected in the heavier demand for coke.

Connellsville Coke Sold

Boston, Aug. 20.—A considerable tonnage of Connellsville 48-hour coke was sold by a dealer to gas companies in New England during the past week, the business being placed because of fears of a suspension of anthracite tonnage. The price on Connellsville coke is $5 to $5.25 for standard grade, to which must be added a freight rate of $5.55. Everett and Providence makers' prices for foundry coke are unchanged at $13.50, delivered within $3.10 freight radius in New England. Producers of the latter brand are said to have been behind on deliveries as a result of the demand caused by apprehension over the anthracite situation. Dealers generally reported the coke business as dull.

Same Prices Reduced

Detroit, Aug. 21.—The scrap market continues uneven in price, with only fair tonnage moving. The inquiry of some mills has thus far failed to produce any large business, but dealers feel that the mills soon will be buying more liberally. Yard dealers have large stocks on hand. Heavy melting steel and railroad wrought iron No. 2 are down $1 a ton. Weakness continues in hydraulic compressed bundles and prices are down $1 a ton. Forge flashings are off 50 cents a ton.

St. Louis Market Quiet

St. Louis, Aug. 21.—Coke buying in this district is at a low ebb. The only transaction of any size reported in the past week was the purchase of 1000 tons of foundry coke by an Iowa melter for delivery through the balance of the year. Other sales have consisted of car lots. By-product manufacturers report a slowing down in sales.

Pig Iron Price Firmer

(*Continued from Page* 499)

tons for a Kansas City melter. A small lot of resale southern iron was purchased at $22.50, but the lowest furnace offer from Birmingham is $24, and other makers there are quoting up to $27. On Chicago iron $27 can be done, and there are rumors of sales at $26.50. The leading local furnace continues to mention $27.50 to $28.50, f.o.b. Granite City.

Market Continues Quiet

Birmingham, Ala., Aug. 20—The pig iron market is very quiet. New business is so light that serious consideration is being given to curtailment of production and two or more furnaces may soon be blown out. It is reported that a small furnace company has offered a little more tonnage at $24 and $25, for No. 2 foundry, to be delivered during the fourth quarter. One of the larger producers of pig iron in this district sold an eastern melter a little tonnage for delivery during the next 60 days, the first sale in that direction in some time. A few inquiries for pig iron recently gave encouragement, but there is no indication that the market is going to become more active in the near future. Addition to the surplus iron is at the rate of almost 1000 tons a day and stocks on hand are rapidly piling up to quite a total.

Eastern Market Firm

Philadelphia, Aug. 21.—Whether less than $25 furnace, can be done in pig iron is doubtful. Producers have much low priced iron on their books and costs are higher. The price of $25 is regarded as below cost. While sales in the past week included several thousand tons of foundry iron the market is quiet. One dealer booked 7000 tons of foundry iron in small lots. Inquiry includes several lots of 500 tons to 1000 tons of foundry iron. Not only is the price holding firmer at $25 but freights are not being equalized so much as before. Many producers have production sold far enough ahead for comfort and are willing to wait. No instances of higher prices are met. The general situation is more active with larger inquiry. Ocassionally requests are made to hold shipments, due to lack of labor at foundries.

Short Day, Davis' Topic

Washington, Aug. 21.—In his Labor day address, which he expects to deliver this year at Birmingham, Ala., Secretary of Labor Davis will talk on the abolition of the 12-hour day in the steel industry. Some years ago when some of the mills now included in the Tennessee Coal, Iron & Railroad group in the Birmingham district were started, Mr. Davis was on the payroll, and for a 12-hour job. His comment, like that of Secretary of Commerce Hoover, is that "the steel industry is doing a fine thing."

Rules on Freight Rates

Washington, Aug. 21.—The interstate commerce commission has denied the Chesapeake & Ohio railroad permission to continue after Jan. 15, 1924, freight rates, without observance of the fourth section (long and short haul clause) of the interstate commerce act, on coke from points in West Virginia to C. F. A. territory, on coal from points in West Virginia and Kentucky to points in Illinois, Indiana, Michigan, Missouri, New York, Ohio, Pennsylvania and Wisconsin and on coal from Kentucky and West Virginia points to Ketucky points. Similar permission has been denied, after Dec. 15, to the Wabash railroad in regard to coke from Illinois and Missouri points to Iowa and Missouri points, on coke from Quincy, Ill., to St. Paul, Minneapolis and Minnesota Transfer, Minn., and on coke from Quincy to Cedar Rapids, Iowa and Jefferson City, Mo.

The Trumbull Steel Co., Warren, O., reports net earnings of $1,272,000 for June 30 quarter compared with $750,000 for first quarter. June earnings were $480,000 and the largest of any month in second quarter.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Aug. 22 1923	July 1923	May 1923	August 1922
PIG IRON				
Bessemer, valley del. Pitts....	$28.27	28.52	32.07	29.16
Basic, valley	25.00	25.15	29.80	27.96
Basic, eastern del., eastern Pa...	25.10	27.25	30.75	29.50
*No. 2 foundry, del. Pitts.....	26.27	27.37	31.91	32.76
*No. 2 foundry, Chicago.....	27.00	28.00	32.50	28.60
*Southern No. 2, Birmingham..	23.50	25.00	27.00	20.70
*Southern Ohio, No. 2, Ironton..	26.00	26.50	31.00	27.00
**No. 2X, Virginia furnace ...	26.50	27.25	28.60	26.00
***No. 2X, Eastern del., Phila	26.26	28.00	32.76	32.15
Malleable, valley	24.50	25.50	30.20	28.60
Malleable, Chicago	27.00	28.00	32.50	28.60
Lake Superior charcoal, Chicago	32.04	36.65	36.65	33.75
Gray forge, val. del. Pittsburgh	26.27	27.02	31.17	30.16
Ferromanganese, del. Pitts....	122.29	122.79	129.79	72.29
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh	42.50	42.50	45.40	35.00
Sheet bars, open-hearth, Pitts....	42.50	42.50	45.40	35.00
Billets, bessemer, Pittsburgh....	42.50	42.50	45.00	35.00
Billets, open-hearth, Pittsburgh..	42.50	42.50	45.00	35.00
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.40	2.40	2.40	1.80
Steel bars, Chicago	2.50	2.50	2.50	1.88
Steel bars, Philadelphia.....	2.72	2.72	2.77	2.275

	Aug.22 1923	July 1923	May 1923	August 1922
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia	$2.72	2.72	2.82	2.125
Iron bars, Chicago mills	2.50	2.55	2.60	1.98
Beams, Pittsburgh	2.50	2.50	2.50	1.80
Beams, Philadelphia	2.82	2.82	2.87	2.325
Beams, Chicago	2.60	2.60	2.60	1.90
Tank plates, Pittsburgh	2.50	2.50	2.50	1.80
Tank plates, Philadelphia	2.82	2.82	2.92	2.325
Tank plates, Chicago	2.60	2.60	2.60	1.90
Sheets, blk., No. 28, Pittsburgh.	3.85	3.85	3.85	3.25
Sheets, blue anl., No. 10, Pitts.	3.00	3.00	3.00	2.45
Sheets, galv., No. 28, Pittsburgh	5.00	5.00	5.00	4.25
Wire nails, Pittsburgh	3.00	3.00	3.00	2.40
COKE				
Connellsville furnace, ovens.....	4.50	4.35	5.10	13.20
Connellsville foundry, ovens....	5.25	5.15	6.10	14.30
OLD MATERIAL				
Heavy melting steel, Pittsburgh.	17.00	18.25	22.20	17.10
Heavy melting steel, eastern Pa..	16.00	17.25	20.40	15.25
Heavy melting steel, Chicago....	15.75	17.12	19.75	15.80
No. 1 wrought, eastern Pa....	17.50	18.85	24.40	18.25
No. 1 wrought, Chicago.....	15.50	16.62	19.95	16.35
Rails for rolling, Chicago.....	17.75	18.37	21.80	16.75

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago

August 22, 1923	August 15, 1923	July, 1923	May, 1923	August, 1922	August, 1913
$44.84	$44.84	$45.39	$47.52	$39.79	$25.97

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Iron and Steel Prices

SCRAP PRICES, PAGE 564, WAREHOUSE PAGE 556, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 560
Composite Market Record by months for Nine Years on Page 558

Pig Iron

Bessemer, valley	$26.50
Bessemer, Pittsburgh	28.27
Basic, valley	25.00
Basic, Pittsburgh	26.77
Basic, Buffalo	24.00 to 24.50
Basic, del. eastern Pa.	25.00 to 25.25
Malleable, valley	24.50 to 26.00
Malleable, Pittsburgh	26.27 to 27.77
Malleable, Chicago	27.00 to 27.50
Malleable, Buffalo	25.00
Malleable, del., eastern Pa.	26.25 to 26.75

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.23
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	26.76
No. 1X, Buffalo	26.50
No. 2 foundry, valley	24.50 to 26.00
No. 2 foundry, Pittsburgh	26.27 to 27.77
No. 2 foundry, Buffalo	25.00
No. 2 foundry, Chicago	27.00 to 27.50
No. 2 foundry, Granite City	27.50 to 28.00
No. 2 foundry, Ironton fur.	26.00
No. 2 foundry, Cleveland del.	26.50 to 26.75
No. 2, foundry del. Phila.	25.76
No. 2 foundry, N. J. tidewater	26.13 to 26.76
No. 2X, eastern del., Phila.	26.26
No. 2X, east. N. J. tidewater	26.63 to 27.26
No. 2X, eastern del. Boston	29.15 to 29.65
No. 2X foundry, Buffalo, fur.	25.50
No. 2X, Buffalo, del. Boston	29.91 to 30.41
No. 2 southern, Birmingham	24.00 to 25.00
No. 2 southern, Cincinnati	27.55 to 31.05
No. 2 southern, Chicago	29.51 to 30.01
No. 2 southern, Philadelphia	30.30 to 30.80
No. 2 southern, Cleveland	29.51 to 30.01
No. 2 southern, Boston (rail and water)	30.41 to 30.91
No. 2 southern, St. Louis	28.67 to 29.17
No. 2X, Virginia furnace	26.25 to 26.50
No. 2X, Virginia, Phila.	31.52 to 31.77
No. 2X, Virginia, Jersey City	31.79 to 32.04
No. 2X, Virginia, Boston	32.17 to 32.42
Gray forge, eastern Pa.	25.00 to 25.25
Gray forge, val. del., Pitts.	26.27
Low phos., standard, valley	32.00
Low phos., standard, Phila.	32.79
Low phos., Lebanon furnace	32.00 to 33.00
Charcoal, Birmingham	34.00
Charcoal, Superior, Chicago.	32.15

Silvery Iron

Jackson County, Ohio, furnace

7 to 8 per cent	$33.00
8 to 9 per cent	34.50
9 to 10 per cent	36.50
10 to 11 per cent	38.50
11 to 12 per cent	41.00
12 per cent	43.50

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	$43.50
11 to 12 per cent	46.00
12 to 13 per cent	48.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$112.50 to 117.50
Ferromanganese, delivered, Pittsburgh	117.79 to 122.29
Spiegeleisen 19 to 21 per cent furnace or tidewater	45.00 to 47.50
Ferrosilicon, 50 per cent contract freight allowed	82.50 to 87.50
Ferrotungsten standard, per pound contained	95.00
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon per pound contained, delivered	12.00
Imported ferrochrome, 4 to 6 per cent carbon	nominal

†Duty paid.

Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.50
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$4.50 to 4.75
Connellsville foundry	5.25 to 5.75
New River furnace	8.00 to 9.00
New River foundry	11.00 to 11.50
Wise county furnace	6.00 to 6.75
Wise county foundry	7.00 to 7.50
Alabama furnace	7.00 to 7.50
Alabama foundry	7.50 to 8.00

By-Product

Foundry, Newark, N. J., del.	$11.34 to 11.41
Foundry, Chicago, ovens	13.50
Foundry, Boston, delivered	13.50
Foundry, Granite City, Ill.	13.00
Foundry, Alabama	7.75 to 8.50

Semifinished Material

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Open-hearth, Philadelphia	45.17 to 47.17
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50
Forging, Pittsburgh	47.50
Forging, Philadelphia	53.67 to 55.17

SHEET BARS

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50

SLABS

Pittsburgh	$42.50
Youngstown	42.50

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh, $51.00

Standard extras, $2.50 per ton over ¼ inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.40c to 2.45c
Universal skelp, Pittsburgh	2.40c to 2.45c
Sheared skelp, Pittsburgh	2.40c to 2.45c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	2.50c
Structural shapes, Phila.	2.72c to 2.82c
Structural shapes, New York	2.74c to 2.84c
Structural shapes, Chicago	2.60c
Tank plates, Pittsburgh	2.50c
Tank plates, Philadelphia	2.82c
Tank plates, New York	2.84c
Tank plates, Chicago	2.60c
Bars, soft steel, Pittsburgh	2.40c
Bars, soft steel, Philadelphia	2.72c
Bars, soft steel, New York	2.74c
Bars, soft steel, Chicago	2.50c
Bars, refined iron, Pittsburgh	3.25c to 5.00c
Bars, rail steel, Chicago	2.30c
Reinforcing bars, Pittsburgh	2.30c to 2.40c
Bar iron, common, Phila.	2.72c
Bar iron, common, New York	2.74c
Bar iron, common, Chicago	2.50c
Bars, forging quality, Pitts.	2.65c

Hoops, Bands, Shafting

Hoops, Pittsburgh, large	3.15c
Hoops, Pittsburgh, small	3.50c
Bands, Pittsburgh	3.15c
Cold finished steel bars, Pittsburgh base	3.25c
Steel shafting, Pittsburgh	3.25c
Cotton ties, bundle 45 lb. Pittsburgh	$1.62

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	30.00 to 35.00
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.25c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.15c
Spikes, small railroad, Pitts.	3.50c to 3.75c
Spikes, boat and barge, Pitts.	3.50c to 3.75c
Spikes, railroad, Chicago	3.25c
Track bolts, Pitts. Standard	4.00c
Track bolts, Pitts., small	4.75c to 5.00c
Track bolts, Chicago	4.25c
Tie plates, Pittsburgh	2.60c
Tie plates, Chicago	2.60c

Spike, tie plate and truck bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Wire nails, Pittsburgh	3.00c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples, Pittsburgh	3.45c
Galvanized staples Pittsburgh	3.80c
Coated nails, count keg, Pittsburgh	2.70c
Woven wire fencing (retailers)	65 off
Woven wire fencing (jobbers)	67½ off

Chain, Piling, Strip Steel

Chain, 1-in. proof coil, Pitts.	6.50c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburgh stamping quality	3.15c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base	5.00c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	3.75c to 3.85c
No. 28, bessemer, Pitts.	3.75c to 3.85c
No. 28, open-hearth, Phila.	4.07c to 4.17c
No. 28, open-hearth, Chicago	4.09c to 4.19c

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	3.85c
No. 28, open-hearth, Chicago	3.84c

GALVANIZED

No. 28, open-hearth, Pitts.	5.00c
No. 28 bessemer, Pittsburgh	5.00c
No. 28, open-hearth, Phila.	5.32c
No. 28, open-hearth, Chicago	5.34c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.00c
No. 10 bessemer, Pittsburgh	3.00c
No. 10, open-hearth, Phila.	3.32c
No. 10, open-hearth, Chicago	3.34c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.35c

Tin Plate

Per 100 lb. box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	63.20 to 65.20
Six-inch and over, Chicago	59.20 to 61.20
Three-inch, Birmingham	59.00 to 60.00
Four-inch, Birmingham	53.00 to 54.00
Six-inch and over, Birmingham	49.00 to 50.00
Four-inch, New York	66.50 to 67.50
Six-inch and over, New York	62.60 to 63.30

Standard fittings, Birmingham, base, $110.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Scrap Prices Advancing

Tone of Market Is Stronger as Consumer Inquiry Revives—Buying Continues Limited to Small Tonnages—Dealers Are Active

SCRAP PRICES, PAGE 564

Chicago, Aug. 21.—The better sentiment in the scrap iron and steel market noted a week ago continues but prices have further dropped off. One dealer reports considerable improvement in inquiry for steel works scrap. Few orders in excess of 100 or 200 tons have been entered, however, and shoveling steel, compressed sheets and angle bars are down a full 50 cents below the quotations of a week ago. The cast grades are firmer, No. 1 cast scrap selling at $21 in Chicago during the last few days. Western roads have lists out covering over 30,000 tons of miscellaneous scrap. Of these the principal items are 4000 tons for the Sante Fe railroad, 8000 tons for the Chesapeake & Ohio railroad and 9000 tons for the Louisville & Nashville railroad. All dealers are united in reporting a better undercurrent in trade and the improvement noticed in some Eastern centers is expected to spread to this market.

Prices Remain Stationary

Boston, Aug. 21.—Prices of scrap iron and steel are stationary. Some dealers expect an upward movement in prices because of the stiffening tendency in eastern Pennsylvania, but this view is not generally held. Dealers continue to buy but only in small volume. Heavy melting steel is quoted at $11.50, f.o.b. shipping point, and cast grades are quoted at $22.50, delivered New England point. Local melters are withholding from the market because they are anticipating a rise in prices. The tone of the market is fairly firm.

Prices Are Unchanged

New York, Aug. 21.—Quotations on iron and steel scrap are unchanged with a fair tonnage of heavy melting steel and borings and turning being moved. No. 1 railroad steel or the equivalent is being booked for Bethlehem, Pottsville and Conshohocken at $16, delivered. Some dealers are figuring on an advance to $17 in the near future. Borings and turnings are going to Riddlesburg at around $14 and to Monessen at $14.50. It now develops that more than 15,000 tons of this material has been purchased within the past month by the Cambria plant of the Bethlehem Steel Co.

Buying Is Limited

Buffalo, Aug. 21.—Desultory buying characterizes the scrap iron and steel market with dealers furnishing most of the activity. They are buying for stock and at the prices they are paying now, will have to obtain considerably more than $17.50 to make a profit. A shortage of cast scrap exists and this market is holding up. Mills apparently are not going to buy immediately and dealers are becoming reconciled to this condition.

Stronger Tone Is Noted

Philadelphia, Aug. 21.—Iron and steel scrap prices continue unchanged from a week ago. There is a stronger undertone to the market and dealers prefer to buy rather than sell at current quotations. Several consumers are in the market but are unable to place tonnages, except at higher prices. An offer of $16 delivered for melting steel is offered by most melters, while several are offering $16.50. One offer of $17 was noted. However, all of these have failed to bring out tonnage. Rolling mill grades are dull and foundries are holding up shipments and are buying no new material. A shortage of labor is limiting operations. Dealers are of the opinion higher prices will be offered soon.

Prices Revised Upward

Cleveland, Aug. 21.—Improved inquiry and greater readiness on the part of consumers to take tonnage on contract has strengthened the iron and steel scrap market here. Some melters continue to hold up shipments but in general there is less disposition to do so. Practically all prices have been revised upward during the past week. These revisions run from 25 cents to $2.30 a ton. Heavy melting steel is quoted $16.50 to $17, an advance of 50 cents; bundeled sheets up $1 to $11 to $11.50; hydraulic compressed sheets, up 50 cents to $14 to $14.25; No. 1 cast, up $1.50 to $20.50 to $21; heavy cast, up 50 cents to $14.25 to $14.50; stove plate up $2.50 to $15 to $15.50.

Quotations Are Advanced

Pittsburgh, Aug. 21.—Prices of various items in the scrap iron and steel list have advanced this week. The price advance spreads from 50 cents to $1.50 a ton. The Monessen, Pa. embargo on borings and turnings was modified one week ago and this week the restriction governing shipments of heavy melting steel was lifted. The removal of all restrictions on shipments into this district points toward another rally in prices inasmuch as short interests in the market will endeavor to purchase material

(*Continued on Page* 516)

Ferromanganese

Market Conditions Sound, Though New Selling Is Light

FERROALLOY PRICES, PAGE 501

New York, Aug. 21.—Ferroalloys are dull in the East and little demand is coming out for spiegeleisen or ferromanganese. Spiegeleisen is quoted at $45, eastern furnace, for 19 to 21 per cent and $44, furnace, for 16 to 19 per cent. In carloads $2.50 higher than these figures is asked. There is small demand, as large users are covered for some distance into the future, many having covered their requirements to the end of the year. Producers have no stocks and are shipping their entire make as fast as produced. A number of contracts are about to expire, which will bring some new demand into the market. Ferromanganese is firm at $117.50, seaboard, and buying is light. Some resale material has been coming out, at $1 to $2 under this figure, but this seems to have been absorbed. Shipments of English ferromanganese are coming in steadily.

Prices Are Unchanged

Boston, Aug. 21.—Business is slow in all the special alloys and prices generally are unchanged. Ferrotungsten is quoted 88c to 90c a pound contained; tungsten ores $8.25 to $8.50 a short ton unit for average wolframite; $9 to $9.50 for high grade scheelite. Ferrochrome prices quoted by importers have been further influenced by declines in continental exchanges, especially the low-carbon grades, but demand is so slow that prices are of little moment at present. Ferrovanadium prices range from $3.50 to $4.50 a pound contained, according to quantity and analysis. Fifty per cent ferrosilicon has sold at $85, delivered, to points taking a high freight and at $82.50 to nearby delivery points, in carlots.

Market Conditions Sound

Pittsburgh, Aug. 21.—Nothing has transpired over the week to alter conditions in the alloy market. With stocks in consumers' hands low, and with the absence of suspensions against contracts, producers and sellers view the market as sound. Inquiry for ferromanganese still is on a low plane. Purchasers of this material request immediate shipment and ask sellers to wire the car numbers when loading is completed. When a ferromanganese requirement comes up for consideration, the tonnage involved usually is small Holders of resale material continue to quote a price under $117.50, tidewater, and are satisfying the bulk of current demand, which is at low ebb. A carload of English second-hand ferromanganese was purchased this week at slightly below $115, duty paid tidewater, by a conusmer in this district. English and domestic producers, however, continue firm in their quotation of $117.50, seaboard base, but report no sales nor the likelihood of any until resale tonnage is out of the way. Ferrosilicon is in small request and the only sale uncovered this week involves two carloads of 50 per cent material ground, which brought $85 freight allowed. About 50 tons of vanadium concentrates are available at 3.50c per pound but with operations of certain alloy steel plants now conducted on reduced schedules, it is difficult to locate a buyer for this material. No change is apparent in the spiegeleisen market. Few sales are consummated in view of slack demand. The bulk of the business entered in recent weeks has entailed a carload or two but the current market has no semblance of action. Producers are holding tonnage at $45, furnace, on 18 to 22 per cent material in carload lots, and $47.50 for less-than-carload quantities.

Eastern Market More Active

Philadelphia, Aug. 21.—The market for ferromanganese is more active, interest being shown by smaller users.

The price is steady at $117.50. Spiegeleisen is featureless. The price is nominally $45, furnace.

Tin Plate Makers

Trying to Fill Obligations Before Opening Fourth Quarter Books

TIN PLATE PRICES, PAGE 501

Pittsburgh, Aug. 21.—Tin plate producers are doing their utmost to clear away present obligations before opening books for the fourth quarter, but despite efforts in this direction large tonnages necessarily will have to be scheduled for October rolling. New request is broad but until makers determine prices to govern next quarter's business not much business is being accepted other than in a tentative way. Stock plate in the hands of some producers practically is exhausted and with consumers taking all overage now being rolled, little promise is held for building up supplies. At a few plants orders for certain sizes of stock plate can be filled upon which producers are holding to $5.50, base Pittsburgh. Operations have not been curtailed to any appreciable extent and are in the neighborhood of 80 per cent of capacity. Specifications are well in hand and no letup in pressure is noted from can makers anxious to get deliveries on tonnage.

Price Tends Higher

New York, Aug. 21.—Tin plate continues firm and with a tendency to higher levels, some makers asking $5.75 to $6 per base box. The market is generally $5.50 per base box, Pittsburgh. Makers are not satisfied at the latter price and as many mills are well sold through the remainder of the year they have been asking and in some cases obtaining, higher prices. It is becoming increasingly difficult to obtain full fourth quarter delivery, as many makers cannot supply a continuing tonnage for that delivery. Prices for fourth quarter have not been announced, sales for that delivery being at the price prevailing at the time of delivery. The Texas Co. is in the market for 75,000 base boxes, about 4000 tons, an unusually large inquiry for which there is likely to be considerable competition.

Wait for Fourth Quarter Prices

Philadelphia, Aug. 21.—Fourth quarter prices on tin plate have not been announced and buyers are waiting. The price is firm at $5.50 for the third quarter. Mills are far behind in shipments.

Manganese Ore Dull

New York, Aug. 21.—Demand for manganese ores is dull, consumers having sufficient on order or in stock to meet their needs. They probably will not require much new supply during the remainder of the year. Prices are nominal but it is believed an effort to buy would be likely to bring out lower figures, since considerable free ore is available. Indian and Brazilian ore is nominally 40 to 42 cents per unit, c.i.f. tidewater, while Caucasian ore is 44 cents per unit for the washed and 40 cents for the crude.

Semifinished Market Dull

Little Interest in Sheet Bars, Billets or Slabs—Makers Await Results of Short Day Before Quoting for Fourth

SEMIFINISHED STEEL PRICES, PAGE 501

Youngstown, Aug. 21.—Demand for sheet bars, billets and slabs here is limited to fill-in lots and no large tonnages are under negotiation. Mills are doubtful at this time whether they would be willing to entertain large tonnage inquiries, at least until their mill costs become more clearly established in the light of the shorter workday. It is believed $42.50, Pittsburgh and Youngstown, is the firm minimum today on sheet bars, billets and slabs. If the price moves at all when new buying begins, it is said to tend rather upward than downward.

Billet Demand Is Small

New York, Aug. 21.—Not much new business is coming out for rolling or forging billets, but mills are busy filling orders already on books and indications are for a good demand in a fortnight. Present demand, though small, is steady. Prices are steady and unchanged. Wire rods are in good demand, and firm at $51, Pittsburgh.

Billet Inquiry Increases

Philadelphia, Aug. 21.—Better inquiry for forging and rerolling billets is noted. Sales are made at $50, Pittsburgh base for forging, and $42.50 for rerolling. The tendency is lower and it is believed a large attractive tonnage of forging billets could do $47.50. Wire rods are in good demand for shipment on contracts. Inquiry is light. Consumers are specifying fully. Prices are firm.

Quietness Prevails At Pittsburgh

Pittsburgh, Aug. 21.—Continued quietness is noted in the semifinished market and little new business is under negotiation. Sheet bars, billets and slabs are quoted by makers at $42.50, Pittsburgh, and in the absence of demand no lower price has been developed. Specifications against current contracts are being worked off and in a number of cases this is keeping producing capacity engaged. Forging billets still are in light demand and producers have little tonnage against which to quote. When the occasion raises, however, some mills are naming $47.50 while others have their quotations on a higher level. Wire rod quotations continue unchanged at $51 on standard sizes and $53.50, Pittsburgh, on material over ¼-inch. Request for all grades of skelp shows no increase. Prices are unchanged at 2.40c, base Pittsburgh, with special grades commanding a higher level.

Market At Cleveland Quiet

Cleveland, Aug. 21.—The market for sheet bars, billets and slabs is quiet. The leading maker in this district continues to make reservations for the fourth quarter as customers indicate their needs. Nothing is transpiring in the open market to show any departure from a price of $42.50 on the three grades, though buyers probably would find that price very strong in view of increasing costs due to the change to the 8-hour day.

The Fahrig Metal Co., manufacturer of bearing metal, has moved its plant and offices from 34 Commerce street to 26 Renwick street, New York city.

Wire Sales

Are Still Confined to Moderate Tonnages—Jobbers Are Active

WIRE PRICES, PAGE 501

Pittsburgh, Aug. 21.—Sales of various wire products other than bright wire and nails still are confined to relatively moderate quantities. Jobbers continue active in their demand for nails and some good business is being booked for fall delivery. No difficulty is experienced in prying loose specifications. Nail factories are operating at capacity and some are slated at this rate for the next two months. A slight improvement is noted in demand for fencing. The majority of wire fence makers are in a position to offer reasonably prompt delivery at 65 per cent off. No change in prices is evident, wire nails being firm at 3.00c and plain wire at 2.75c, base Pittsburgh. Polished and galvanized staple requests have shrunken somewhat although the decline in this direction has not moved quotations from 3.45c to 3.80c, Pittsburgh.

Nail Demand is Better

New York, Aug. 21.—Appreciable increase in demand for wire and nails is noted in this market, while deliveries remain about the same as formerly, recent bookings having taken up the slack noted last week. No tendency is noted to shade prices, nails continuing at 3.00c, Pittsburgh, 3.34c, delivered, New York, and wire 2.75c, Pittsburgh.

Wire Products in Demand

San Francisco, Aug. 17—Wire products and especially nails are in heavy demand throughout the Far West, prices are firm and stocks generally in bad shape. Demand is coming in from practically every source but no speculative buying is noted, consumers apparently ordering only for their immediate requirements. The outlook for the balance of the year is especially encouraging, state mill representatives. The Colorado Fuel & Iron Co. has again become a factor in this territory owing to the rail freight reduction and the advance in water rates.

Sales Decline Slightly

Chicago, Aug. 21.—Sales of wire products during the past week have failed to uphold the auspicious start to a fall buying movement which was apparent a week ago. Inquiry continues favorable, but actual business closed during the past week is considerably lower than it was during the previous week. Manufacturers are rapidly catching up on delivery and fairly prompt shipment of both fencing and nails can be secured at present. Prices hold firm and heavy buying is looked for about Sept. 1.

Bars Exhibit Strength

Producers Continue Efforts To Fill Contracts—Small Lot Inquiry Prevails and Specifications Are Fair—Price Is Firm at 2.40c

BAR PRICES, PAGE 501

Chicago, Aug. 21.—Deliveries still are behind on soft steel bars and Pittsburgh mills, offering 30 days delivery at 2.40c, Pittsburgh, which means 2.74c, Chicago, have made several attractive sales here during the week. Local mills are offering third quarter bars at 2.60c and it is the opinion of some authorities that deliveries are improving. The Steel corporation's August sales are double those for the same period of July.

Bar iron orders have materially increased during the past week. Prices hold firm. Smaller tonnages are being placed at 2.45c and large orders at 2.40c. Mills have about as heavy orders for third quarter as they care for.

Rail steel bar business is quiet. The price holds nominally at 2.30c. Producers are anxious for business and undoubtedly an attractive tonnage would command a slightly lower price. One maker reports quieter conditions the past week than at any time since July 1.

Strong Demand Is Absent

Pittsburgh, Aug. 21.—Producers of soft steel bars continue to work against contracts and report specifications are being issued without interruption and in good volume. Inquiries are fair but the tonnage under request is moderate with prompt delivery desired. An inquiry for 700 tons put out late last week found a taker with an open rolling schedule and shipment went forward within three days. A condition such as this frequently gives rise to rumors of lower prices and this week unconfirmed reports are some producers are quietly seeking fill-in tonnages at 2.35c, base Pittsburgh. If this is authentic, sales at this figure have been well concealed inasmuch as close investigation fails to disclose a mill willing to sell any tonnage under 2.40c, base Pittsburgh. Manufacturers of bar iron report new business on a small scale although one consumer of muck bar is endeavoring to line up several thousand tons.

No change in prices of refined iron are current, the spread continuing from 3.25c to 3.50c, base Pittsburgh. Double refined iron continues quotable at 5.00c while producers of low phosphorus melting bars are quoting $92 a ton, Pittsburgh.

Good Inquiry for Bars

Cleveland, Aug. 21.—Steel bars are firm at 2.40c, base Pittsburgh, the demand apparently being maintained by the current needs of manufacturers in all lines of industry. The purchase of a fair tonnage of bars is expected from the manufacturers of automobile bumpers. It is expected action will be taken as soon as the plans of automobile builders regarding production schedules for new models are announced.

Market Is Quiet

Pittsburgh, Aug. 21.—Indulgence in the cold-drawn bar market is less noticeable on the part of consumers although the market is not void of new business. While orders are of insignificant volume, producers are hopeful of a fairly definite enlargement in activity soon. In some cases producers are meeting with difficulty in getting buyers to send in their specifications against contracts. Producers of cold-drawn bars are making no firm efforts to get business under 3.25c although this figure cannot be said to be firm in all cases, especially where attractive specifications are brought to light.

Demand Is Light

Boston, Aug. 21.—Dealers in steel bars report business quiet. There is some demand to cover requirements, but only small tonnages are moving. Prices are unchanged at 2.40c, base Pittsburgh.

Demand Is Better

New York, Aug. 21.—Better demand for steel bars is coming through from many sources and the prevailing quotation of 2.40c, Pittsburgh, is held firmly. Indications of better demand in the fall are seen in every direction, as general business improves. Small lots prevail in inquiry and much is for immediate delivery, indicating the need of consumers to obtain material for prompt use.

Bars In Demand

San Francisco, Aug. 17.—Both merchant and reinforcing bars are in good demand although the latter is by far the most active. Reinforcing bar jobbers and in places contractors report more work than they can handle and they see no let up in sight. The majority of awards are comprised of the smaller lots all under 100 tons. During the past week 900 tons of large awards were let and over 1700 tons are pending. Prices remain unchanged at 3.65c f.o.b. San Francisco in carload lots.

While new bookings of cold-rolled material consist in the main of car lots, mill representatives report a satisfactory volume coming to hand considering the time of year. Prices in this district remain firm at 3.25c base Pittsburgh although rumors are heard of lower prices of from $1 to $2 per ton, but verification of this has not been obtained.

Rivet Extras Are Revised; Bolts, Nuts To Go Up

NUT AND BOLT PRICES, PAGE 560

Pittsburgh, Aug. 21.—A revised list of rivet extras which will become effective Sept. 1 and which were adopted to offset recent advances on standard card extras of raw materials are being mailed to the trade. Only one base price on rivets will be quoted after Sept. 1 instead of one on structural and one on boiler rivets as has been customary. Structural rivets will be based so that when boiler rivets are specified 20 cents per hundred pounds will apply as shown in the following list in addition to other standard extras for diameters, blanks, etc. New list prices to apply on machine, carriage, blank and tapped bolts, nuts, etc., are being prepared and will be mailed to the trade about Aug. 24. The new rivet list of base sizes and extras follow:

Base Sizes

List of base sizes and extras, button head structural

¾-inch, ⅞-inch, 1-inch and 1⅛-nich up to and including 4 15/16-inch packed in kegs or bags weighing 200 pounds or more.

Standard Extras

½-inch diameter	75c
⅝-inch diameter	35c
9/16-inch, 11/16-inch, 13/16-inch, 15/16-inch and 1 1/16-inch, subect to same diameter extras as nearest smallest diameter, plus 25c net per 100 pounds.	
Rivets larger than 1⅛-inch diameter	25c
Lengths 1 inch and shorter	75c
Lengths longer than 1 inch up to and including 2 inches	25c
Lengths 5 inches and longer	50c
Swell next	25c
Annealing rivets for cold driving	50c
Rivets packed in 100 to 199-pound packages	40c
Reinforcing keg or packing in bags for export 25c net extra per package. Packing in boxes for export—price on application.	
Cone or button head boiler and tank rivets	20c
Steeple head rivets	45c
Counter sunk head rivets	45c
Bull head rivets	70c
Pan head rivets	45c

Special shape or size head other than style and standard above listed—price on application.

Where necessary to ship less than 100 pounds of a size, $1 net extra will be added for broken keg.

Cost of testing and inspection, if any, to be at customer's expense.

New Rivet Prices Expected

Cleveland, Aug. 21.—Higher prices are expected to be placed on rivets no later than Sept. 1 as the result of the higher card extras being quoted on raw materials. Similar action is also expected to be taken by bolt and nut producers. Demand while not large continues of fair size and the price shading of several weeks ago has practically disappeared. Specifications against contracts are fairly heavy.

Buying Shows Improvement

Chicago, Aug. 21.—Specifications for bolts and nuts have materially improved during the week. One of the principal sellers here reports orders entered as fully 25 per cent above the average weekly total for July. Inquiry is widespread and it indicates continued generous buying. Warehouses are commencing to stock up. Railroads are buying for fall requirements. Prices are firm.

Ore Imports Drop

Philadelphia, Aug. 21.—Imports of iron ore into this port during the week ended Aug. 18 again showed a decline. Of the 21,951-ton total, 12,400 tons came from Cuba, 2351 tons from Sweden and 7200 tons from French Africa. Besides the iron ore 392 tons of ferromanganese and 100 tons of ferrosilicon was imported.

Hoop Demand Is Quiet

HOOP PRICES, PAGE 501

Pittsburgh, Aug. 21.—Nothing has happened in the hoop and band market to interrupt the condition that has existed during the past two weks. Some pent up tonnage has been released and producers of automobile rims have taken

more interest in the market in the way of placing new business, but the market still is quiet. Producers are working off what business they have on hand and in this connection there are plenty of openings in rolling schedules at certain mills. Reflecting the weakness of demand for these products is the fact tonnage is obtainable not higher than 3.15c, Pittsburgh, for ordinary widths and gages for prompt delivery, while on specifications of an attractive character no denial is encountered that a lower price may be developed. Some producers of hoops and bands, 17-gage and lighter and 1 inch and under, are quoting 3.50c, Pittsburgh, where the tonnage involved is attractive.

Iron Ore Shipments Still at Heavy Rate

ORE PRICES, PAGE 560

Cleveland, Aug. 21.—Iron ore shipments from the Lake Superior district are continuing in heavy volume, and the August movement will be around 10,400,000, according to present indications. Minnesota miners work eight hours a day and those in Michigan nine hours, so the short-day shift in other departments of the industry is not a problem on the ranges. The labor situation is easier. The Erie railroad is preparing to increase its facilities for handling iron ore at Cleveland at an estimated expenditure of $300,000. Equipment will be installed this fall, raising the capacity for handling ore from 20,000 tons a day to 30,000 tons or more. Little interest is noted in the market aside from the usual run of small tonnages needed for filling in.

New Chevrolet Plant Is Placed in Operation

Cincinnati, O., Aug. 21.—Production of automobiles in the new plant of the Chevrolet Motor Co. on Smith road, Norwood, O., has been in progress one week. The plant started operations with the production of a few cars which will be increased gradually from 300 to 350 cars daily. Only a few hundred men are employed at present. This plant will turn out cars for the southeastern part of the country.

In the same building a plant of the Fisher Body Co. is located, which, like the Chevrolet Co., is a subsidiary of the General Motors Corp. The Fisher plant will turn out automobile bodies of open and closed types for the chassis built by the Chevrolet company. The plant is a long 2-story building. It is so constructed that raw materials starting at one end of the place come out a complete machine at the other end. There is a system of conveyors, trucks, cranes and hoists that makes the plant one of the most modern assembling points in the country. R. S. Montgomery is the general manager.

The Gardner Screw Corp., Gardner, Mass., recently completed the erection of an addition to its plant.

Plate Consumption Heavy

Users Seeking Better Delivery on Contracts—New Demand in Smaller Volume—Some Tank Jobs Coming Out—Price Steady

PLATE PRICES, PAGE 501

Philadelphia, Aug. 21.—Demand for plates is not heavy though considerable inquiry is coming out and many makers are behind on deliveries. Railroads are seeking plates for car repairs, and lots of 500 to 1000 tons are wanted for tanks. The present situation is satisfactory. Consumers are seeking immediate shipment on contracts, showing consumption is active. Some producers are making better delivery. The price is steady at 2.50c, Pittsburgh, and there is no tendency to shading.

Plate Prices Untested

New York, Aug. 21.—In the absence of large tonnage inquiries for steel plates the market is regarded as firm at 2.50c, Pittsburgh, though a test on an attractive tonnage might develop something lower. This is particularly true as to heavier plates. Mills are well sold on the lighter gages and these have greater firmness. General demand for plates is fairly heavy, though it is in small lots. The Standard Oil Co. of New Jersey has closed for 1150 tons of plates for a number of miscellaneous tanks. Its inquiry for some 9000 tons of plates for 30 tanks of 80,000 barrels capacity has not yet been placed, as far as is known here. The situation in the gasoline market doubtless has caused storage tank work to pause. Platemakers are in comfortable position.

New Business Satisfactory

Pittsburgh, Aug. 21.—Plate business is satisfactory, though shipments exceed new orders. While the bulk of shipments now is for tank and car construction, producers have not received much inquiry from tank fabricators. Specifications are being issued freely. Fabricators of large storage tanks have not been active in the market this week although they are supplied with a fairly large volume of inquiries calling for tanks of large capacity. One plate producer is unable to offer delivery until October. Quotations of district producers continue firm at 2.50c, base Pittsburgh.

Western Inquiry Heavy

Chicago, Aug. 21.—Plate manufacturers report more than 60,000 tons of inquiry in hand at present. Prospects are for still further improvements as the season progresses. The bulk of the inquiry is for oil tanks. The Sinclair Oil Co. is reported about to close on 14,000 tons. California oil interests are in the market for 18,000 tons. Deliveries still are 90 days behind. Mills are running full. Prices are firm. Prompt delivery demands 2.80c and a round tonnage has been booked at this figure. The Steel corporation continues to quote 2.60c. Over 10,000 tons of railroad inquiry for material for repairing cars is reported.

Plate Prices Are Firm

Cleveland, Aug. 21.—The plate market during the past few days has brought forth signs of activity, especially in the demand for small lots for prompt delivery. While 2.50c, base Pittsburgh, continues to be the prevailing price for plates for extended delivery, producers are having no difficulty in obtaining higher prices for prompt steel. Several lots have gone at as high as 2.60c, Pittsburgh, while in a few emergency cases, having little market significance, prices of 2.65c and 2.70c, Pittsburgh, were involved. An encouraging feature of the present situation is that the demand is not confined to any one industrial group. The improved rate at which specifications are being brought out apparently is due to the need of plates in all branches of manufacturing.

Sheet Business for July Shows Decrease

Pittsburgh, Aug. 21.—Statistical data covering the independent sheet steel industry and compiled by the National Association of Sheet & Tin Plate Manufacturers shows a decline in total sales, production and shipments for July as compared with the report of the previous month. Sales consummated by these producers reporting to the association decreased 80,279 tons equal to 28.6 per cent. Production lost during July compared with June was 43,522 tons, or from 79.9 per cent to 65.3 per cent; while shipments declined 40,867 tons or from 85.3 per cent to 71.8 per cent. The following is a full list of comparisons:

	Net tons	Per cent to capacity
Total sales for month	92,358	34.5
Total production	174,910	65.3
Total shipments	192,261	71.8
Unfilled tonnage as at Aug. 1	404,868	151.2
Finished stock on hand awaiting shipment	109,068	40.7
In stock unsold	32,062	11.9

The total number of hot mills in the United States is 668, having a capacity for July, 1923 of about 385,000 net tons, and the percentage of the capacity to which the foregoing figures are related is 69.6 per cent.

To Install Equipment

Pittsburgh, Aug 21.—Officials of the company which recently took over the plant of the East Ohio Mfg. Co., have retained Barton Shover as consulting engineer to handle the improvements of the plant, which are to be undertaken immediately. The plant will be equipped for the manufacture of strip steel of special grades, including alloy, high carbon, and nickelplating stock. The equipment to be installed includes two stands of 12-inch, four stands of 10-inch, and four stands of 8-inch cold strip mills, in addition to auxiliary equipment, such as gang slitters, shears and annealing equipment.

Concrete Continues Dull

Orders Involving Larger Tonnages of Reinforcing Bars Still in Abeyance—Prices Are Well Maintained as a Rule

REINFORCING BAR PRICES, PAGE 501

Cleveland, Aug. 21.—Activity in the local reinforcing bar market continues on an even keel, some dealers claiming that new work is considerably heavier than for weeks past, and others stating that there has been an appreciable letup in orders for small tonnages. Among those interested in highway work, attention is centered on the 10 jobs coming before the state highway commission Aug. 24. If decided in favor of concrete there will be approximately 400 to 500 tons of bars involved. The new babies' dispensary and maternity hospital in Cleveland will require a round tonnage. About 170 tons will be needed for the new waterworks at Euclid Village. For warehouse goods 2.75c, base Pittsburgh, holds steady, with the shading being upward if anything. Little price cutting is being done in new steel bars now, the general market being 2.40c, Pittsburgh. On re-rolled, 2.30c, base mill, still is quoted, with favorable business going at 2.25c and 2.20c, mill.

Large Projects Are Few

New York, Aug. 21.—Suppliers of reinforcing bars find most business at present is in small lots and that larger projects are being delayed in awards or are not being put up for bids. The volume of bars demanded by the smaller projects is satisfactory and business is excellent. Considerable highway work is being done, which usually is in small stretches, taking small tonnages of bars. Warehouses continue to quote 2.75c. Pittsburgh, on bars and while mill prices are generally 2.40c, Pittsburgh mill, the market is entirely on a store basis and mill competition is not being met.

Demand Still Dull

Pittsburgh, Aug. 21.—Little inquiry developed over the week for reinforcing concrete bars. Most of the fresh projects under consideration entail but meagre tonnages. Sellers in some cases are free to entertain tonnages for reasonably prompt delivery and are doing so whenever the requirement proves attractive. Demand still is restrained by reason of new projects being held in subjection. Moderate tonnages of bars continue to be quoted at 2.40c, base Pittsburgh, while larger lots continue to command 2.30c, Pittsburgh.

Turnover on Even Level

Chicago, Aug. 21.—Turnover in concrete bars in the Chicago district continues on an even level. Total sales for the past week are reported equal to the average of the last six or seven weeks. According to one authority this is at a rate of about 70 per cent of fabricating capacity. While several new jobs of moderate tonnage have developed, the general run is for work calling for less than 100-ton lots. Prices are held firm at 3.00c by the principal dealers. Here and there, however, a small operator is apt to cut this price slightly to move tonnage. The Chicago, Burlington & Quincy railroad postponed its award for bars for its new outbound freight house. This will be let Tuesday or Wednesday of this week. The Sanitary district is still figuring over its bids covering 6000 tons. No report as to date of probable award is available. The St. Paul water works let a contract for 500 tons for a new power plant to C. A. Turner, Minneapolis. The Concrete Steel Co., Chicago, took 250 tons for Illinois roadwork.

CONCRETE CONTRACTS PLACED

Awards this week	**2,952 tons**
Awards last week	**2,150 tons**
Awards two weeks ago	**3,628 tons**

500 tons, power plant at St. Paul, to C. A. Turner.
400 tons, 13-story office building at Eighth and Olive streets, Los Angeles, to Badt-Falk Co.
300 tons, Blickman manufacturing building, Long Island City, to Concrete Steel Co.
250 tons, Carlton Plaza hotel, Detroit, to Kalman Steel Co.
250 tons, roadwork for State of Illinois, to Concrete Steel Co.
220 tons, garage in Chicago, to Kalman Steel Co.
200 tons, Washington building, Buffalo, N. Y., to unnamed fabricabtor.
200 tons, Pickwick Stage depot, Fifth street, San Francisco, to Gunn, Carle & Co.
200 tons, building in Chicago, details withheld.
165 tons, Du Bois, Pa., waterworks to the Fabricators Corrugated Bar Co., announced previously as awarded to independent steel company.
132 tons, power plant at Philo, O., to an unnamed fabricator.
100 tons, roadwork State of Minnesota, to Kalman Steel Co.
100 tons, filter house at Milwaukee, to Kalman Steel Co.
100 tons, five bridges for Oregon state highway commission, Portland, Oreg., to Union Bridge Co.

CONCRETE CONTRACTS PENDING

900 tons, outbound freight house for Chicago, Burlington & Quincy railroad at Chicago; bids in.
600 tons, grain elevators for New York state board of canal terminals, Oswego, N. Y., bids to be asked soon.
350 tons, Terminal warehouse, Second and Brannan streets, San Francisco; bids in.
300 tons, Bekins Fireproof Storage Co., Geary &Emerson streets, San Francisco; bids in.
200 tons, warehouse for Western Pacific railroad, San Francisco; bids being received.
200 tons, Elks lodge, Santa Rosa, Cal.; bids in.
170 tons, waterworks for Euclid village, Lake Shore boulevard and Bliss road, Cleveland; bids in Sept. 4.
123 tons, bridge in Riverside county, Cal., White Water river bridge; bids opened.
100 tons, Havens building, Oakland, Cal.; bids being received.

Pipe Demand

Not Large But Makers Are Still Heavily Obligated

PIPE PRICES, PAGE 501 AND 560

Pittsburgh, Aug. 21.—While new buying of lapweld pipe shows a decline, manufacturers of pipe experience little concern because of obligations. New lapweld business coming out is entirely for prompt shipment and the mileage involved is not large. Some producers are in a position to work in a little business of certain sizes from time to time and in this connection one maker booked approximately 5000 tons of 8-inch stock. As far as can be learned, the Greensboro Gas Co. still is looking for a taker of 20 miles of 10-inch pipe. Merchant pipe still is in strong demand and jobbers are pressing makers for delivery and to grant them increased tonnages over the remainder of this year. Some jobbers already are beginning to line up pipe for steam heating purposes. District producers have no buttweld tonnages to offer for the next 60 to 90 days, while some mills are out of the market over the remainder of the year.

Current Municipal Demand Small

New York, Aug. 21.—Interest in the local cast iron pipe market is centered chiefly on two lots for the local water department, one involving 5000 tons, and the other 700 tons. Contractors' bids go in today. Little else in the way of municipal demand is active at the moment. Prices are tending upward.

Small Sales Are Numerous

Chicago, Aug. 21.—Awards of heavy tonnage of cast iron pipe have been absent from this market for two weeks but all sellers report a large number of small orders and the total tonnage handled has probably increased. Industrial plants in the Chicago district have recently been buyers of lots from 30 to 50 tons. Repair work and small extensions for municipalities throughout the West have brought in a steady run of small orders which have been placed without advertising. The general contract for the Chicago Sanitary district work has been let and the award for 2000 tons of 60-inch pipe is looked for within a few days. The town of Hibbing, Minn., is in the market for 600 tons of 6-inch and 8-inch pipe. A round tonnage for export is in the market, but details are lacking. Prices remain firm.

Bookings Slowly Growing

Birmingham, Ala., Aug. 20.—Southern cast iron pipe companies still are receiving lettings each week. The aggregate tonnage is not large but is adding steadily to business on hand. Confidence now is expressed that there is enough business in hand and in sight with the pressure pipe makers to warrant steady operation through the winter. Quotations are unchanged despite reports concessions have been made. Transportation facilities in cast iron pipe also are favorable and deliveries steady.

CAST IRON PIPE AWARDS

900 tons, 4, 6 and 8-inch pipe for San Bruno, to the United States Cast Iron Pipe & Foundry Co.
112 tons, 4 and 6-inch pipe for Alhambra to the National Cast Iron Pipe Co.

CAST IRON PIPE PENDING

5000 tons for the New York City water department; bids in Aug. 21.
2200 tons, 4, 6 and 8-inch pipe for Montecito, Cal.; bids opened Aug. 1.
800 tons, 8-inch, 12-inch and 16-inch pipe for city of Chicago; bids being taken.
700 tons for New York City water department; bids in Aug. 21.
600 tons, 4 and 6-inch pipe for Oak Lodge water district, Oak Lodge, Oreg., bids in.
600 tons, 6-inch and 8-inch for city of Hibbing, Minn., bids being taken.
525 tons, 6, 8 and 12-inch pipe for San Diego; bids will be called for at once.
188 tons, 4 and 6-inch pipe for Sacramento.
110 tons, 10-inch pipe for Santa Cruz, Cal. Bids in.
Cal. Bids in.
100 tons, waterworks for Euclid village, Lake

Shore boulevard and Bliss road, Cleveland; bids in Sept. 4.

Warehouse Prices Steady as Demand Holds

WAREHOUSE PRICES, PAGE 556

New York, Aug. 21.—Trading in the local iron and steel warehouse market is well maintained, with most jobbers of the opinion August demand will be on a parity with July. An improvement is looked for in September. Shapes and steel bars continue in outstanding demand. Prices all down the list are unchanged. Jobbers anticipating slightly higher mill prices within the near future are for the most part of the opinion the warehouse market, at least on some descriptions, will advance on the next change.

Increase In Demand Reported

Philadelphia, Aug. 21.—An increase in demand for iron and steel products out of warehouse is reported here. Sales are to a wide variety of buyers. As a rule, orders are small but are in unusual number indicating generally a busy state of general manufacturing. Prices are holding at the established levels.

Most Lots Take Small Tonnages

Washington, Aug. 21.—Bids for an addition to the Burlington hotel, a job requiring about 150 tons of concrete reinforcing bars, were opened yesterday. The Central Union Mission building job has not yet been awarded because of a slight change in plans. This project will take about 100 tons. The great majority of work in this district now takes only about 25 tons of bars each. The quotation on reinforcing bars here is 3.35c to 3.50c, Washington warehouse.

Galvanized Sheets Still Shaded

Cleveland, Aug. 21.—A slight let-up in demand is reported by several local iron and steel jobbers. However, the steel corporation's warehouse reports demand so far this month has been on a par with that of last, although orders generally are small. However, these are fairly numerous. Aside from the shading of galvanized sheet quotations prices are firm.

Shapes And Bars In Demand

Chicago, Aug. 21.—Demand for warehouse iron and steel holds steady and prices are unchanged. Shipments from mills have improved. Small structural shapes are moving freely. Concrete bars also are in good demand. Sheets and plates are slightly quieter.

Company Is Rechartered

The death of Capt. Robert W. Hunt recently has caused the incorporation of the co-partnership of Robert W. Hunt & Co., under the name Robert W. Hunt Co. John J. Cone has been made president, D. W. McNaugher, vice president and treasurer and C. B. Nolte, vice president and general manager. W. A. Gresens has been chosen secretary and assistant treasurer. The directors consist of these officers and Luther V. Rice and J. C. Ogden. No change has been made in the personnel of the outside offices.

Sheet Trade Fairly Good

Motorcar Builders Show More Interest in Market—Demand for Black Tonnage Continues Slow

SHEET PRICES, PAGE 501

Pittsburgh, Aug. 21.—Activities in the sheet market still center around the discharge of present obligations. The general tendency is to quote black sheets at 3.85c, base Pittsburgh, though in one or two instances a price of $2 under the market is heard. A consumer of black plate who expected delivery of his requirement this quarter has been advised that shipments cannot possibly be made. Turning to the open market this consumer bought about 2000 tons of black sheets but was not successful in developing a price below 3.85c, base Pittsburgh. Interest in lining up fourth quarter tonnages is growing, although prices still are to be determined. Entries of tonnage for shipment over the last three months are being made only in a tentative manner. Sentiment in the market continues to show improvement over a week ago, due in all probability to easier credit conditions. Blue annealed still is in active request and prices are firm at 3.00c, base Pittsburgh. Inquiries for galvanized sheets also are numerous with quotations unchanged at 5.00c, base Pittsburgh. Operations continue to be maintained at around 80 per cent of capacity.

Shading Only on Export

New York, Aug. 21.—A decided revival in demand for black, blue annealed and galvanized sheets is noted. Prices are firmer and there is less tendency on the part of some mills to shade. On export business to Japan, Porto Rico and Cuba prices are being shaded several dollars. An important maker of sheets has booked more business in the past two weeks than in the month preceding. Much increase in demand is in prospect. The market is quoted at 3.00c, Pittsburgh, for blue annealed, 3.85c for black and 5.00c, Pittsburgh, for galvanized.

Specifications Heavy

Philadelphia, Aug. 21.—Sheet specifications are heavy, but there is not much inquiry or new tonnage booked. Prices are firm at 3.00c, base Pittsburgh, for blue annealed, 3.85c for black and 5.00c for galvanized. There are rumors of some shading in black. Some eastern makers are behind on delivery and not desirous of selling. There is little inquiry for the fourth quarter, but considerable tonnage has been reserved for that delivery, prices to be fixed later. Small lots of blue annealed bring 3.25c. There are indications of better buying shortly. Several inquiries for 300 to 500 tons have just been issued.

More Demand for Auto Sheets

Youngstown, Aug. 21.—Steel sheet mills in the Mahoning valley whose activities depend upon orders for common black sheets are rather out of luck since demand for this grade continues slow; but those with blue annealed and galvanized affiliations find trade fairly good. The slowness of the black sheet trade is reflected in more restricted operations, independent activity averaging 50 per cent, and shipments being much quicker. Galvanized and blue annealed orders continue to keep deliveries some distance ahead. Full-finished or autobody sheets are in steadily growing demand as Detroit and Cleveland builders get into production on their new models. While it may be a fortnight before fourth quarter books are opened, it is the belief in the trade the price of 5.35c, Pittsburgh, will be affirmed. However, there are those who feel the black price of 3.85c, the galvanized figure of 5.00c and the blue annealed price of 3.00c, Pittsburgh, will also prevail when books for new business are opened. Since this may not take place for some weeks, there still is time for some makers to refuse to sell for an entire quarter and only book orders for a month at a time. This is due to the steadiness in the semifinished steel price of $42.50 and the uncertainty of production costs growing out of the shorter workday now going into effect.

Demand for Fourth Quarter

Chicago, Aug. 21.—An urgent demand for fourth quarter sheets is reported in this market. Most of the mills, however, still are somewhat in doubt as to what price to quote for this delivery and are only booking such tonnage as develops on definite specifications for specific jobs. The leading independent reports its mills operating at 65 to 70 per cent which is the maximum under present summer conditions. Deliveries still are far behind and considerable tonnage is being forced to eastern mills. Prices are unchanged.

Strip Buying Is Limited

STRIP PRICES, PAGE 501

Pittsburgh, Aug. 21.—While sentiment in the strip steel market is slightly improved this week, no drastic enlargement of activity is noted. Some buyers continue to purchase on a conservative basis while other consumers from whom some closing action was anticipated a week or two ago, still refuse to participate in the market. The downward trend of prices on hot strip in recent weeks has done little in dragging out new business although this week there is more of a tendency to release specifications particularly on the part of automobile rim manufacturers. Solicitation of business is lively and promises of immediate shipment are common. Producers generally are quoting hot strips at 3.15c, base Pittsburgh, but with competition keen and rolling schedules of a flexible character, attractive specifications can be placed in some directions slightly under the general quotation. Cold-rolled strip steel is unchanged at 5.00c, base Pittsburgh, with quietness in demand reported generally.

Shape Inquiry Stronger

Larger Tonnages Up for Figures—July Bookings of Structural Steel Record Another Drop—Prices Remain Firm

STRUCTURAL SHAPE PRICES, PAGE 501

Washington, Aug. 21.—July sales of fabricated structural steel totaled 113,331 tons, or a drop of 3278 tons from the 116,809 total booked in June according to reports of the bureau of census. July sales were at 50 per cent of shop capacity, the lowest since November 1922, while June sales were at 51 per cent of capacity and May sales at 57 per cent.

For comparative purposes the figures below are prorated to obtain an estimated total for the United States of a capacity of 250 000 tons per month, from April 1922 through July 1923. Earlier figures are based on the reports received by the Bridge Builders and Structural society.

Monthly structural awards showing actual tonnage booked, per cent of capacity reached and the estimated total bookings of the companies reporting are as follows.

	Actual bookings tons,	Per cent of capacity	Estimated total bookings, tons
July	113,331‡	50	125,000
June	116,609*	51	127,500
May	131,291†	57	142,500
April	185,335†	81	202,500
March	218,997	95	237,500
February	183,938	80	200,000
January, 1923	172,415	75	187,500
December	138,024	60	150,000
November	111,794	49	122,500
October	132,450	58	145,000
September	146,146	64	160,000
August	156,011	68	170,000
July	157,631	69	172,500
June	168,498	73	182,500
May	184,638	81	202,500
April	200,588	87	217,500
March	139,300	77	192,500**
February	78,700	43.5	108,750**
January, 1922	72,100	40	100,000**

*Reported by 170 companies with a capacity of 228,160 tons. †Reported by 174 companies with a 229,375-ton capacity. ‡Reported by 156 companies with a capacity of 224,640 tons.

** Figures of Bridge Builders and Structural society revised on basis of 250,000 tons capacity.

Awards Restricted

New York, Aug. 21.—While awards in the local structural market are somewhat restricted, inquiries are coming out freely, and the situation as a whole is strong. One feature is about 6000 tons for four new schools in this city, and the award of 1500 tons, placed by James T. Steward, this city, for two boiler houses for the Standard Oil Co. in Cleveland. A similar tonnage is pending for a municipal motor repair shop here.

Shapes continue steady at 2.50c, Pittsburgh, with some trade interests predicting an advance of a dollar or two within the next few weeks. This opinion appears to be based chiefly on the possibility of an increasing demand, coupled with higher mill costs due to the more widespread adoption of the 8-hour schedule. Fabricated steel prices have fluctuated but little within the past fortnight. Deliveries from the independent mills range around eight to 10 weeks, nearer eight weeks on an average. While an occasional good tonnage can be had in less time, due in some instances to postponement of certain orders such as school work, the fabricating shops generally are able to do little better than three months.

Complete figures covering awards of steel in the metropolitan district for building work, exclusive of piers, bridges subways and work of similar character, as compiled by L. F. Caproni, of the Hay Foundry & Iron Works, show a sharp falling off in the second quarter. Bookings amounted to 71,624 tons, as compared with 143,931 for the first quarter, and bring the total for the first half up to 215,555 tons. This, in turn, compares with Mr. Caproni's estimate of normal requirements of this district for a 6-month period of 240,000 tons. He estimates the available capacity for the district for such a period at 300,000 tons, and on this basis it appears that the shops' bookings were around 70 per cent.

Large Contracts Are Fewer

Chicago, Aug. 21.—Building activity in Chicago and the West is about holding its own, according to leading fabricators. Slight falling off in the number of large contracts is offset by an increase in the number of orders for small tonnages. Awards of the past week in this district total over 6000 tons, the largest of which was 2500 tons to the American Bridge Co. for river spans for the Chicago, Rock Island & Pacific railroad. The most active inquiry is for 1300 tons for a club house in Milwaukee, which is expected to be let this week. Plain material prices are unchanged but recent awards indicate that the price for steel erected has increased slightly. One job for a standard office building was let at $112, erected.

Demand Still Is Quiet

Boston, Aug. 21.—The structural shape market was quiet last week, but this was not displeasing to fabricators for the reason that they are well booked up with orders which they are desirous of working off. Prices are unchanged, with the large interests holding firm at 2.50c, base Pittsburgh. There are rumors that smaller interests are quoting 2.40c, but the ruling figure is 2.50c. Dealers express themselves as thoroughly satisfied with the present lull in demand as the fabricating plants generally have all the business they can handle for the next two or three months. In fact, it is said, their capacity is well booked for the balance of the year. Prompt shipments probably would be impossible to be obtained at this time. The contract for shapes for the proposed Masonic building in this city will not be placed for a month or two as the plans have been delayed.

Awards Still Small

Pittsburgh, Aug. 21.—Numerous small jobs involving insignificant tonnages of structural shapes are under estimate at fabricating departments in this district, with the demand less active than in many weeks. Structural awards this week continue small. The Kanawha county court let a contract this week for a bridge across the Elk river at Clendenin, near Charleston, W. Va., which involves about 100 tons of shapes. The Metal Products Co., Charleston, W. Va., was the successful bidder. The Baltimore & Ohio railroad has awarded contracts to the Seaboard Construction Co., Philadelphia, involving 1100 tons of structural shapes to cover the erection of three plate girder bridges on its Cumberland division and six on its Wheeling division. Tank fabricators have numerous inquiries in their possession for various sized holders but delayed action is reported. Business in this direction is particularly quiet. Producers of structural shapes are holding to 2.50c, Pittsburgh, and fabricators report no quotation under this level.

Demand Still Irregular

Philadelphia, Aug. 21.—Structural shape demand continues irregular here with some dealers finding inquiry decreasing and some finding it increasing. Contracts calling for larger lots are less than recently but the small tonnages make up a good aggregate. Plain material prices are steady at 2.50c, base Pittsburgh, except for one mill which is shading to 2.40c.

Little Business Placed

Cleveland, Aug. 21.—Little activity is being experienced in the local structural shape market, with all lettings being for lots of less than 75 tons. Mills are still booked for from three to four months in advance with 10 weeks being minimum on orders of any size. Prices on jobs requiring small tonnages for quick delivery have stiffened somewhat in the past week. On the orders being placed 2.50c, base Pittsburgh, holds steady. The Great Northern railroad is again in the market for the same 2400-ton lot on which it obtained figures sometime previous.

STRUCTURAL CONTRACTS PLACED

Building awards this week ..... 15,163 tons
Building awards last week..... 18,818 tons
Building awards two weeks ago... 11,486 tons

2600 tons, three bridges for Rock Island lines, to American Bridge Co.

2000 tons, powerhouse for Southern California Edison Co., Los Angeles, to Llewellyn Iron Works.

1500 tons, school No. 74, New York, to A. E. Norton, Inc.

1500 tons, two boiler houses for the Standard Oil Co. at Cleveland, awarded through James T. Stewart, New York to Massillon Bridge & Structural Co.

1200 tons, municipal motor repair shop, Sixteenth street and Avenue C, New York, to McClintic-Marshall Co.

1130 tons, boiler house for Oklahoma Gas & Electric Co. at Harrah, Okla. to Kansas City Structural Steel Co.

1100 tons, bridgework along Cumberland and Wheeling divisions of Baltimore & Ohio railroad, to the Seaboard Construction Co.

1000 tons, additional work on the Philadelphia Enquirer building, Philadelphia, to the American Bridge Co.

900 tons, bridgework in North Dakota for Great Northern road, to Milwaukee Bridge Co.

900 tons, bridges for the Louisville & Nashville railroad, 500 tons going to the American Bridge Co., and 400 tons to the Mt. Vernon Bridge Co.

850 tons, hotel, 120 West Forty-fourth street, New York, to Bethlehem Fabricators, Inc.

550 tons, bridgework for the Baltimore & Ohio railroad, 300 tons for nine bridges going to the Fort Pitt Bridge Works, and 250 tons for two bridges to the Bethlehem Steel Co.

500 tons, 50 additional houses for the Crescent Development Co., Astoria, L. I., to independent fabricators.

400 tons, plates and shapes, for stack construction, Colfax power plant, Springdale, Pa., to the Pittsburgh-Des Moines Steel Co.

300 tons, viaduct over Tom's Brook, for the

Southern railway, to the Virginia Bridge & Iron Works.
300 tons, transit shed Pier No. 154, Nos Angeles, to Union Iron Works.
300 tons, Central station for the police, fire and water departments, Troy, N. Y., to A .E. Norton, Inc.
200 tons, plant addition for the American Briquette Co., Lykens, Pa., to the Shoemaker Bridge Co.
200 tons, bridge for the Lehigh & Hudson River railway, to the Bethlehem Steel Co.
200 tons, highway bridge in Mercer county, N. J., to the Harris Structural Steel Co.
150 tons, store and office building at Lakeside, O., to Riverside Bridge Works.
120 tons, 5-story apartment Geary and Leavenworth street, San Francisco, to Golden Gate Iron Works.
115 tons, depot for the New York, New Haven & Hartford railroad, Willis and 132nd streets, New York, to Bethlehem Fabricators, Inc.
100 tons, bridgework across Elk river, near Charleston, W. Va., to the Metal Products Co.

STRUCTURAL CONTRACTS PENDING

3000 tons, Girls Industrial High school, Brooklyn, N. Y.; T. J. Clark, general contractor, low bidder on Plan A, and George A. Fulle, low on Plan B.
2400 tons, bridgework for Great Northern railroad; again taking bids.
2300 tons, state bridge over Ashley river, N. C.; bids exceeded appropriation by $200,000.
1800 tons, two Roth apartments in Thirty-fifth street, New York, 1200 tons and 600 tons respectively; bids asked.
1600 tons, school No. 79, New York; John T. Brady, general contractor.
1600 tons, school No. 196, Brooklyn, N. Y.; bids asked.
1600 tons, school No. 75, Bronx, New York; bids asked.
1500 tons, powerhouse for Western Electric Co., Kearney, N. J.; bids asked.
1400 tons, bridge for Hetch Hetchy Pipe Line at Dumbarton, Cal., U. S. Steel Products Co., low bidders.
1400 to 1600 tons, 10-story apartment, for Dwight P. Robinson, New York; bids in. G. E. R. Carpenter, architect.
1350 tons, school No. 98, Manhattan, New York; bids asked.
1350 tons, school No. 78, Bronx, New York; bids asked.
1300 tons, Schroeder apartment hotel, 54 East Sixty-seventh street, New York; pending.
1300 tons, club house at Milwaukee, bids in; three low bidders announced.
1200 tons, apartment for Sonn Bros., West Thirty-ninth street, New York; bids in.
1200 tons, collier, Hillside Coal & Iron Co., Pittston, Pa.; bids asked.
1000 tons, Elks building, San Francisco, bids in Aug. 24.
800 tons, apartment, West Fifty-ninth street, New York; bids asked.
700-800 tons, redesigned Niagara Falls hotel, Niagara Falls, N. Y.; pending.
700 tons, subway repair work, New York; bids asked.
600 tons, Siegel apartment, 17 East Sixty-ninth street, New York; bids in.
600 tons, office building, 36-42 West Forty-seventh street, New York; pending.
500 tons, building for American News Co., New York; pending.
500 tons, building for McCall Publishing Co., Dayton, O.; bids being taken.
500 tons, aparement, 15 Park avenue, New York; bids asked.
500 tons, Klaus apartment, 241 West Seventy-fourth street, New York; bids asked.
450 tons, garage at Jerome and Motthaven streets, Bronx, N. Y.; pending.
400 tons, high school, Hartford, Conn.; bids asked.
400 tons, building for Vanderbilt University, Nashville, Tenn.; bids asked.
100 tons, micellaneous work for Public Service Corp. of New Jersey, Newark, N. J.; bids asked.
100 tons, addition to Museum of Art, New York; pending.

General Refractories Co. shows $774,921 net earnings for the six months ended June 30, 1923. The report covers operations for four months before the acquisition of the properties of the American Refractories Co. The company reports bookings to capacity for the balance of the year.

Harry J. and Charles J. Dockray have opened their new foundry on Arthur street, Zanesville, O. They are said to be planning to enlarge the business in the near future.

Roads Place More Rails

Mills Book 68,000 Tons for First Half 1924 Delivery—Illinois Central To Build 166 Mile Cut Off

RAILROAD TRACK MATERIAL PRICES, PAGE 501

Chicago, Aug. 21.—Western roads are buying rails for 1924 delivery. Orders from four of these during the past week total 68,000 tons and urgent inquiry totaling over 40,000 tons is in the hands of makers. One close observer estimates that the total tonnage of rails so far booked for 1924 delivery reaches 350,000 tons. Of this amount something over 100,000 tons has been placed by Western roads. The balance includes the order for 150,000 tons placed sometime ago by the New York Central railroad. It is understood that the $43 base price will hold for the first six months of 1924 and business is being entered on this basis. The Union Pacific and the Wabash railroads have both been heavy buyers, the latter taking 10,000 tons of rails of the 68,000 tons mentioned. The Erie railroad has an inquiry for 400 suburban coaches, but other than this, car activity has been limited largely to repair work. The Chesapeake & Ohio railroad has contracted for the repair of 1500 cars and Swift & Co., Chicago, is in the market for 100 underframes and miscellaneous repair material. The Illinois Central is asking for 1200 tons for a car ferry. This railroad has secured permission to construct a 166-mile cut-off line between Fulton, Ky. and Edgewood, Ill. It is estimated this project will cost $16,000,000.

Car Buying Scattered

New York, Aug. 21.—Award of 1000 box cars by the Canadian National featured car buying for the week. Other lettings were small and scattered and included repairs to 700 box cars for the New York Central railroad. Locomotive buying was quiet also, including two for the Toronto, Hamilton & Buffalo, awarded the American Locomotive Co., and one for the California & Western Railroad & Navigation Co., placed with the Baldwin Locomotive Works. Railroad equipment manufacturers generally look for no marked revival in the near future. As has been the case for some time past, manufacturers are hard pressed in making deliveries. This is particularly true of the car builders, who for the most part are booked up to the end of the year.

More Interest Is Shown

Pittsburgh, Aug. 21.—Interest in the rail market was awakened last week with the placing in this district of a 2500-ton order for standard rail sections. Awarding of this tonnage for shipment next year is likely to result in early action by other carriers and the situation is being watched with interest. Rail mills in this district are booked at least six months ahead. Producers of light rails do not observe an active market in view of curtailment of mine operation, but in the face of this condition there apparently is no effort to quote less than 2.25c, base mill, on 25 to 45-pound sections reduced from billets or rejected standard rails. During the past week, however, buying of light rails on the part of bituminous coal mine operators is reported on a slightly broader scale by some producers. Buying demand of miscellaneous track fastenings is not of an urgent character although inquiry in this direction is reported to have been stimulated slightly . Tie plates are being quoted at $52 a ton, Pittsburgh, the recent price of 2.75c, Pittsburgh, having been discarded generally. Spike business has been coming to makers in about the same volume as a week ago but there still is room for improvement. Standard spikes are unchagned at 3.15c, Pittsburgh, while small railroad, boat and barge spikes generally are quoted at 3.50c per 100 pounds, Pittsburgh. Standard track bolts are being offered at 4.25c by some makers while on attractive tonnages 4.00c is not being overlooked.

CAR ORDERS PLACED

Canadian National railways, 1000 box cars, to the Pressed Steel Car Co.
New York Central railroad, repairs to 500 box cars, to Ryan Car Co., and repairs to 200 box cars, to the American Car & Foundry Co.
New York, Chicago & St. Louis railroad, 100 steel underframes for box cars, to the Pressed Steel Car Co.
Pere Marquette, 300 hundred underframes, to Pressed Steel Car Co.
Philadelphia & Reading railroad, 200 hopper car repairs, to Pressed Steel Car Co.

CAR ORDERS PENDING

Norfolk & Western, repairs to 1000 hoppers; pending.
Erie railroad, 400 suburban coaches; pending.
Chicago & Alton railroad, 250 gondolas and 356 gondola bodies; pending.
Montour railroad, subsidiary of the Pittsburgh Coal Co., 500 hoppers; pending.

Furniture Shipments Drop

Washington, Aug. 21.—Shipments of steel furniture in July were valued at $1,247,605, as compared to $1,401,950 in June and $945,768 last July, according to figures of the bureau of census. The following figures compare the shipments for the first seven months of 1922 and 1923 as reported by 22 manufacturers:

	1923	1922
January	$1,362,470	$ 983,834
February	1,307,173	967,125
March	1,709,206	1,087,228
April	1,520,286	1,058,382
May	1,506,072	1,056,735
June	1,401,950	1,015,463
July	1,247,605	945,768

Hupp Motors Net Gains

Net earnings of the Hupp Motor Car Co., Detroit, for the first six months of 1923, totaled approximately $1,500,000 after large reserves for possible inventory depreciation and other items had been deducted.

A surplus of $245,337 after expenses, interest, taxes, etc., for the six months ended June 30, 1923, is reported by the General Railway Signal Co. Reports of unfilled orders on hand aggregate $1,200,000.

The Nonferrous Metals

Metal Markets Stronger and More Active Both at Home and Abroad—Zinc and Lead Higher

	Copper—Electro delivered	Copper—Lake delivered	Spot Straits New York	Lead† New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Aug. 15.....	14.00	14.12½	39.00	6.70	6.32½	25.50	7.87½	29.00
Aug. 16.....	14.00	14.25	39.50	6.70	6.37½	26.00	7.87½	29.00
Aug. 17.....	14.00	14.25	39.25	6.70	6.42½	26.00	7.75	29.00
Aug. 20.....	14.00	14.25	39.50	6.70	6.45	26.00	7.75	29.00
Aug. 21.....	14.00	14.25	39.50	6.75	6.50	26.00	7.62½	29.00

†Outside market quotation.

NEW YORK, Aug. 21.—Nonferrous metal markets have been stronger and somewhat more active both here and in London the past week. Conversations between the British and French governments and the change of cabinets in Germany are construed as definite progress toward a settlement of the reparations question, which has been deadlocked for so long.

The American markets are not only stimulated by a hope of an improved economic situation abroad, but have been subject to peculiar domestic influences. Labor troubles in the zinc industry, curtailed output of lead due to a variety of reasons and heavy consumption of tin in our tin plate industry have contributed strength to each of these industries, the strength affecting prices.

Copper settled to 14c, delivered, last week and some business was done as low as 13.87½c, delivered. Later the market recovered to 14c and some producers showed reluctance about taking additional business at that figure. The stock of copper in hands of producers increased 12,500,000 pounds last month and it is expected August stocks will show a further accumulation. Hope that the European political situation may be ironed out in coming months is extending some strength to copper, while domestic consumption is proceeding at a rate larger than recent buying would indicate. Casting copper sold down to 13.75c, refinery; lake was quoted 14.12½c to 14.25c, delivered.

Zinc advanced to 6.50c, East St. Louis, Tuesday with no metal obtainable at 6.45c. Announcements by the western smelters of a wage reduction of 10 per cent were opposed by smelter labor at six plants in the Oklahoma and Arkansas district, while a strike for a different cause has been in effect at the Hillsboro, Ill., smelter of the American Zinc, Lead & Smelting Co. Some of the eastern smelters, unable to reduce wages because of competition with steelworks, have closed down some blocks of furnaces. British consumption of zinc has been active and British supplies have been getting low, with the result that the London market has risen steadily and British buyers have been bidding actively for zinc in this country. Resumption of export business has been expected almost daily.

The expiration of the Pittman act which stimulated silver lead production; the fire at the Hecla mine, Kellogg, Idaho, stopping production of 2000 tons of lead from that property; a fire in an Australian lead mine; reduction of Joplin zinc-lead ores due to low zinc ore prices; and shortage of labor in the southeast Missouri field have combined to cause a short supply of lead, in contrast with a better consumption than expected. In consequence lead prices have been strong at 6.40c to 6.45c, East St. Louis. The American Smelting & Refining Co. has maintained its official contract price of 6.50c, New York, but outside sales have been made at 6.75c, New York.

The tin market has been stronger the past week on good buying by American consumers and covering purchases in London. The London speculative trade has been somewhat more encouraged on the Ruhr outlook, but not enough to assume any pronounced bull position. Straits tin prices have ranged between 39c and 39.50c, with 99 per cent tin about ⅜c to ½c under the Straits price.

Antimony has been quiet at 7.75c, duty paid, and was offered down to 7.62½c Tuesday.

The aluminum market has been somewhat firmer, with 98 to 99 per cent virgin ingot aluminum held in the open market at 26c, New York. Inquiry has improved.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 24 oz., min.	22.75
High brass	19.00
Zinc, ga. 9 to 18 (plates ½c less)	9.25
Lead, full sheets (cut ¼c more)	10.25
Aluminum, base 18 ga. and up...	35.40
SEAMLESS TUBES	
High brass	24.50
Copper	26.00
RODS	
High brass, round, ⅝ to 2½ inch	17.25
Naval brass rod	19.50
WIRE	
Copper	16.50 to 17.00
High brass	19.50

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.00 to 9.50
New York	9.00 to 9.25
Chicago	8.50 to 8.75
HEAVY YELLOW BRASS	
New York	6.25 to 6.50
Chicago	6.25 to 7.00
Cleveland	6.00 to 6.50
ZINC	
New York	4.25
Cleveland	3.00 to 3.25
HEAVY COPPER AND WIRE	
Cleveland	10.50 to 11.00
New York	11.25 to 11.75
Chicago	10.75 to 11.50
RED BRASS TURNINGS	
New York	8.00 to 8.25
Cleveland	8.00 to 8.50
Chicago	8.00
YELLOW BRASS TUBING	
Cleveland	6.00 to 6.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	5.50 to 6.00
New York	6.75 to 7.00
Chicago	6.50
ALUMINUM BORINGS	
Cleveland	9.00 to 9.50

Southern Metal Trade Industries Active

According to a recent report of the Atlanta office of the bureau of foreign and domestic commerce, Chamber of Commerce building, Atlanta, Ga., metal trades industries of the South during the first half of this year probably have enjoyed the greatest period of activity in the export sales of its products in the history of these industries. There has been an unusually large demand for southern made machinery, mill supplies and equipment from the various Latin-American countries, and a considerable tonnage of southern made products also has been shipped the past 6 months to the Far East and to European countries, this business being principally in railroad supplies, steel rails and railroad equipment. There has been greater activity at all southeastern ports the past 6 months than in several years due to the growth and development of export trade in this district, the report further shows.

Company To Manufacture Wire and Nails

The Florida Steel & Wire Co., a new corporation recently formed with general headquarters located in the Professional building at Jacksonville, Fla., has obtained an existing plant at that city and ordered machinery for the establishment of a plant to manufacture nails, wire products and kindred products. It is reported by officials of the company that the new plant will probably be ready to operate by the end of September. Officers of the company, which is capitalized at $225,000, are W. A. Evans, president; J. C. Conally, vice president; E. I. Carefoot, M. D., secretary and treasurer, and John G. Palmer, general manager. Initial capacity of the new plant will be approximately 250 kegs of nails daily, Mr. Palmer states. For the past 15 years, Mr. Palmer has been actively identified with the steel and wire industry at Pittsburgh and Cleveland.

Firms Are Merged

Consolidation of the Winchester Foundry Co., with the Timmins Machine Works, Lexington Ky., was announced recently by William Timmins, president of the latter company. The two concerns have been consolidated under the firm name of the Timmins Foundry Co. The Winchester Foundry Co., which is one of the largest foundries in Kentucky, manufactures gray iron and semisteel castings from one pound to 20 tons.

Coast Demand Increases

Need for Pipe and Oil Country Goods Is Heavy—Building Permits in West Decline Slightly

SAN FRANCISCO, Aug. 18.—Although trading in iron and steel products in the local market during the past week has been confined to small lots, in the main, the aggregate booked has been satsifactory considering the time of year. Oil companies have placed additional tank awards and demand for pipe and oil country goods remains heavy. The trade here looks for good business for the balance of the year.

Building permits issued in Los Angeles for July totaled $15,083,273. Pacific coast cities as a group have reported a reduction in building activities during July amounting to 18 per cent less than the total for June, but show an increase of 40 per cent over July, 1922. The 23 cities included in the July report returned a total of $28,438,896 in building permits, as compared with $19,480,713 for July of last year and with $32,738,896 for June, 1922. Permits issued in Los Angeles up to and including Aug. 7 show that 1500 permits were issued with an estimated valuation of $6,648,490.

The farming situation throughout the state is none too encouraging, due to the fact that the prices being paid for grain, fruit and stock are low. On the other hand, the oil, mining and lumber interests of the state are in an extremely healthy condition and profits are mounting, which will compensate, at least partly, for the condition of the former industry.

Despite the fact that the older established steamship companies, engaged in the intercoastal traffic, state that they are holding firm to the new rates announced recently by the westbound conference, evidence is at hand showing that at least two of these companies have recently contracted at the old rate. Consumers and mill representatives are vitally interested in this situation for the time is near when fourth-quarter prices will be named and many of the companies selling steel are planning to name c.i.f. prices. In many quarters it is the prevailing opinion that the new 40-cent rate will not be a stabilized one and that it will be only a question of a few weeks more before all companies will be quoting the 30-cent rate.

Pig Iron and Coke

Demand for pig iron and coke remains light and dealers report sales have been confined to small lots only, with the exception of a 1000-ton lot, composed of 250 tons of 2.25 to 2.75 silicon iron and 750 tons of 1.75 to 2.25 silicon iron which the Southern Pacific company purchased this week. Although verification could not be obtained it is reported that southern iron was purchased. Foreign iron is being quoted generally at around $37 to $38 a ton, duty paid, San Francisco, but as far as known no large lots have been contracted for for sometime. Coke is also inactive.

Pipe Market

No letup in demand for standard merchant pipe has occurred in this district and jobbers are specifying heavily. Shortages exist in most sizes and buyers continue to press mill representatives for deliveries. Despite the curtailing of production in the older oilfields of the state, demand for oil country goods apparently remains as strong as ever. One of the largest distributors in Los Angeles reports that sales during July were the largest in the history of the house. Several large inquiries for line pipe are before the trade, outstanding among which is an inquiry from one large producer for 2000 tons. Oilfield operations reported to the state oil and gas supervisor for the week ending Aug. 11 show 21 new wells started, as compared with 24 during the previous week. Total new wells this year to date is 902; total same date last year 857. Yearly total to date 1228; total same date last year 1060. Deepening or re-drilling jobs numbered nine, as compared with 15 the previous week. Total to date this year 410; total same date last year 533. Abandonments numbered seven as compared with four during the preceding week. Total to date this year 162; total same date last year 174.

Demand for cast iron pipe from private sources remains quiet though a fair volume of municipal lettings have been made and some large tonnages are pending. During the past week 1000 tons were awarded, while over 3500 tons is pending. Prices have softened about three dollars per ton and $59 delivered for attractive tonnages is being quoted. Demand for oil pipe is quiet at present due to the fact that distributors purchased heavily a few months ago in order to take advantage of the lower water freight rates. Renewal of activity is expected around the first of September.

Railroad Material

The only inquiry for rails before the trade here for sometime is one pending now for 475 tons of 70-pound rails for the Pacific Lumber Co. The Southern Pacific company recently closed on 400 kegs of track bolts and the Western Pacific railroad is asking for bids on 300 kegs of track bolts.

Shape Prices Strengthened

Prices have strengthened in structural shapes on the coast during the past week and 3.10c c.i.f. Pacific Coast ports appears to be the minimum obtainable at present. The largest award of the week involved 2000 tons for a powerhouse for the Southern California Edison Co. and was awarded to the Llewellyn Iron Works of Los Angeles. The Merced Irrigation district is preparing plans for five bridges which will involve a total of approximately 3000 tons. Stock buying is confined almost entirely to lots of 100 tons.

Plate Tonnages Small

During the past week only small tonnages of plates have moved, but some large lots are expected in the near future. Reports from Portland state that bids are expected to be called for within two weeks for 17,000 tons for the Bull Run pipe line. The Associated Oil Co. has not yet closed on its inquiry for 13 80,000-barrel tanks. The Shell Oil Co. has withdrawn its inquiry for 10 to 20 80,000-barrel tanks. One large interest in the southern part of the state has purchased 1500 tons of plates that were recently disposed of at the Brooklyn navy yard. No action has yet been taken by the Chancelor Midway Oil Co. for one 80,000-barrel tank at Torrance. Prices in plates have also stiffened and 3.10c to 3.15c c.i.f. San Francisco is the prevailing figure.

Sheet Buying Light

New buying of sheets is confined to scattered lots involving relatively small tonnages. Interest here is centered on what prices will be named for fourth quarter, many being of the opinion that higher prices will be announced. No weakness has developed in this territory and prices are firm at 3.00c, 3.85c and 5.00c base Pittsburgh on blue annealed, black and galvanized sheets respectively.

Warehouse Material

Out-of-stock distributors report that sales so far this month, while not large, are satisfactory considering the time of year and are slightly in excess of those for the corresponding period in July. Wire products and pipe are moving best. The situation in San Francisco as regards the resale of both black and galvanized sheets is far from satisfactory owing to the fact that some speculative interests have brought into this market some fair sized tonnages and are disposing of them at prices lower than established prices of the regular jobbers. Due to this condition prices were reduced some time ago from 6.30c to 5.80c on black sheets and from 7.15c to 6.50c on galvanized. In Los Angeles the prices are from 6.50c and 7.30c for black and galvanized respectively or $14 a ton higher on black sheets and $16 a ton higher on galvanized material. Recent changes in San Francisco prices are as follows: bright nails from 4.25c to 4.35c, cement coated nails from 3.80c to 3.90c and small machine bolts from 35 off to 40 off.

Old Material

Movement of melting steel remains quieter than was the case a few months ago and prices have softened somewhat, $15 to $16 a ton delivered being general at present. Cast iron scrap is in good demand, material is hard to get and prices are firm at $28 a ton delivered.

Short Workday Makes Headway

Ten-Hour Workers at Valley Steelworks Walk Out Temporarily in Misunderstanding Over Wage Question—Compromise May Be Effected by Advancing Them to 45 Cents—More Men Coming Into Industry

YOUNGSTOWN, Aug. 21.—Several sporadic walkouts occurred within the past few days among groups of workmen employed in valley steelworks, owing to misunderstanding over the operation of the shorter workday. One such at the tube plant of the Republic Iron & Steel Co. at its Haselton mills closed down the mills Friday. On Monday most of the men came back to work with the understanding the company by Sept. 1 would make a clear statement of the operation of the new workday.

Some authorities hold that the 10-hour workmen having a straight day job should feel that is some compensation to him as compared with the 8-hour turn men who take their turn on night duty. Others, however, feel a compromise of about 45 cents an hour in the wage rate would compensate the 10-hour man for the additional time he works. Since conditions are so thoroughly mixed up as yet, it may be some weeks before all details in the working out of the new workday can be ironed out. Meanwhile the temper of the workmen is excellent and they are meeting the negotiations of their employers in a broad spirit. The new workday and 50-cent rate is bringing out some new men who never have worked in steel mills before.

Output in Chicago District Continues Heavy

Chicago, Aug. 21.—The Illinois Steel Co. continues to hold 15 of its 17 stacks in full operation and reports steel production at 90 per cent of capacity or better. The Inland Steel Co. is successfully operating its three blast furnaces on eight-hour shifts at practically 100 per cent production. Production of steel at Inland Steel plants holds steady at between 75 and 80 per cent, which is the maximum obtainable under present conditions of labor and class of material on order. Other independent steel companies are all operating full time with production ranging from 70 to 80 per cent.

Delay Change, Labor Short

Birmingham, Ala., Aug. 21.—Delay is noted in the effort to eliminate the 12-hour day at the furnaces in this district. Labor is scarce and until an adequate force can be obtained it is hardly to be expected that there will be any change.

Duluth Stacks on 8 Hours

Duluth, Aug. 21.—The Minnesota Steel Co. subsidiary of the United States Steel Corp., is operating on 8-hour shifts at its blast furnaces without difficulty. Demand for the company's wire products is improving.

Employment Is Steady at High Level

WASHINGTON, Aug. 21.—July showed a "very slight" increase in unemployment over June, yet the industrial survey for July "indicates a healthy undertone and a splendid spirit of optimism prevails practically throughout the entire industrial field," states the federal employment service. In 1428 industrial establishments employing 500 or more persons each the increase in unemployment in July was only 577, scarcely enough to be noted in the vacation season, according to the service.

Of the 14 basic industries surveyed by the employment service, nine reported increased employment in July. Iron and steel works employment went up 0.44 per cent. In plants working metals other than iron and steel the decrease was 0.08 per cent. Automobile plants reached 1.78 per cent, while railroad repair shops gained 2.4 per cent. Out of 65 cities surveyed, 37 reported increased employment in July over June, 27 decreased employment, and one city, Columbus, O., was stationary. The cities of increased employment included Cleveland, Chicago, Johnstown, Pa., Pittsburgh and Cincinnati. Decreases were reported from Buffalo, Youngstown, O., Detroit, Boston and Toledo, O.

How great the gains are over last July is indicated in the service's comparison showing that all industries except tobacco manufacture increased their personnel from 3.7 to 60.6 per cent over July, 1922. The gain in railroad repair shops was 60.6 per cent, in iron and steel works 25.7, in automobile plants 17.6, and in metal and metal product plants (other than iron and steel) 10.2.

On the basis of reports from 6739 representative establishments in 51 industries the bureau of labor statistics finds employment in July to have decreased 1.8 per cent, while payrolls receded 4.7 per cent and average weekly earnings went down 2.9 per cent. This decrease in employment, the bureau adds, is the first since April and is largely a seasonal one, due to vacations and inventory shutdowns. The July 4 holiday had the effect of reducing the volume of payrolls.

Comparing July, 1923 with July, 1922, 37 out of the 43 industries show for the most part very largely increases in employment, steam railroad car building and repairing and foundry and machine shop products both showing over 50 per cent increase. In payroll totals steam railroad car building and repairing increased 140.7 per cent in the 12 months. Foundry and machine shop products, electrical goods, iron and steel, and chemicals show over 50 per cent increases.

Increases in rates of wages for the month ending July 15, were reported by 302 establishments in 48 of the 51 industries covered. These increases averaged 8.5 per cent and affected 31,829 employes, or 35.3 per cent of the employes in the establishments concerned, and 1.4 per cent of all employes in the 51 industries. Forty-one industries out of 51 show decreased per capita earnings in July as compared with 27 out of 50 in June.

A combined total of reports from the 51 industries shows that 80 per cent of the 5521 establishments reporting as to their operating basis were working full-time, 18 per cent were working part-time, and 2 per cent were closed.

Aids War on Boll Weevil

New York, Aug. 21.—The American Cotton association has been notified by the United States Steel Corp. that it will contribute $25,000 a year for three years to assist the campaign against the ravages of the cotton boll weevil. The Steel corporation is interested in the matter as each bale of cotton requires eight bale ties. The estimated crop loss this year, due to the boll weevil is 6,000,000 bales. This means 48,000,000 fewer bale ties will be required to prepare it for market.

Americans Buying British Iron

Some Further Sales Reported from London, with 1000 Tons of Luxemburg Basic Bessemer Billets to Pennsylvania Ironworks—German Prices on New Sliding Scale Basis—Strikes Are Widespread

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Aug. 21.—A Pennsylvania ironworks has purchased 2000 tons of Luxemburg basic bessemer billets at £6 14s ($30.48) f.o.b. Antwerp. Additional buying of British pig iron by American interests also is noted.

In Europe the attention of iron and steel interests remains centered on the German situation. IRON TRADE REVIEW's correspondent at Dusseldorf reports that strikes are widespread, but there is less mob violence. Twenty-five thousand employes of the Thyssen works are on strike. Coal miners at Recklinghausen, Gelsenkirchen and Dortmund are demanding a bonus of 50,000,000 marks. French authorities have commandeered the Rhine-Elba and Elma coke ovens near Gelsenkirchen and say they will operate them with French workmen.

German prices now are based on a new sliding scale depending on the value of the mark. The following prices actually are being paid for prompt shipment: Pig iron, 100,000,000 marks per ton; coke, 34,000,000 marks; billets 140,000,000 marks; sheet bars and rods, 155,000,000; rails, 178,000,000; bars, 180,000,000; shapes, 179,000,000; ship plates, 202,000,000; medium plates, 227,000,000; sheets, 270,000,000; wire, 191,000,000, and bands, 224,000,000. Railroad freight rates have been advanced 2000 per cent.

The French correspondent of IRON TRADE REVIEW reports from Paris that the seizures of iron and steel in the Ruhr amounting to 500,000 tons, of which 200,000 tons represent finished steel, will be marketed gradually.

The decline in English pig iron prices has been checked. Business is dead. Exports of pig iron from Middlesbrough for the first half of August amounted to 5000 tons compared to 15,000 tons in July. Only bookings made by sheetmakers are equal to current shipments. The London dock strike which has had some affect on shipping has been settled. Price changes in the British market noted during the week bring the following products to the levels as quoted:

Billets and sheet bars £7 5s ($32.99); English home plates, £9 ($40.95); English and Scotch export plates, £8 15s ($39.81); English home rails £9 ($40.95); export rails £8 10s ($38.68); Northamptonshire No. 3 foundry iron, £4 12s 6d ($21.04); Scotch foundry iron No. 3, £5 2s 6d ($23.32); furnace coke, £1 7s 6d ($6.26); foundry coke, £1 15s ($7.96); foundry coke for export £2 10s ($11.38).

Sterling exchange is figured on the basis of $4.55.

British Iron and Steel Trade Still at Low Ebb

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

BIRMINGHAM, Eng., Aug. 10.—Conditions in the British pig iron market show no sign of improvement. The northwest coast is credited with holding stocks up to 500,000 tons, and although six furnaces have been stopped within the last three months the present output cannot be disposed of. Three additional furnaces have been put out on the east coast, all usually producing hematite. This leaves only 43 at work, 11 making ordinary Cleveland iron, 15 hematite and 17 basic or various special irons. Values are lower, No. 3 Cleveland G. M. B. being £5 3s ($23.53) and east coast hematite £4 18s ($22.39). Similarly west coast iron is easier at £5 15s ($26.27) delivered Sheffield. Despite the substantial reduction all these figures must be taken as more or less nominal and subject to reduction for any attractive offer.

This is a period when users generally take seriously into consideration

Sterling—$4.57

their autumn contracts, but with weak prices they are disposed to adopt a waiting policy. Unfortunately the makers get no assistance in regard to fuel, east coast coke costing £2 1s ($9.36) delivered. Nominally the Midland furnacemen are a little better off with coke quoted at the ovens at £1 6s ($5.94). But there is the greatest difficulty in renewing contracts, while new demands as a rule have no chance of consideration in view of the large and lengthy contracts made with the Continent at much better prices. Midland irons no longer show the superior firmness, as compared with other districts, which was a feature two months ago, the Derbyshire quotation of £4 15s ($21.70) with Northampton at £4 12s 6d ($21.13) being anything but firm. Other furnaces have stopped in the Midlands, and unless there is a speedy improvement more suspensions are in prospect. No. 3 Scotch iron has been reduced to £5 5s ($23.99).

The comparative prosperity in France and Belgium has reacted on the British market in reducing the severity of competition. Offers of continental steel are much less numerous than they were, and as a rule the prices are not attractive. A Birmingham merchant has been quoted this week £7 ($31.99) f.o.b. Antwerp for billets and £7 2s 6d ($32.56) for sheet bars. These quotations are of no use in Birmingham, since another pound must be added for transportation and this would bring the figure practically to the British steelworks price, with the further disadvantage of prompt cash conditions. It appears that one firm at least which is a large user of Belgian steel has just made a contract at £7 10s ($34.24) delivered and £7 ($31.99) for 4-inch blooms, the latter in particular being the favorable price to a concern which deals largely in steel skelp for tubemaking.

English steelmakers have stiffened their quotations for semifinished ma-

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange, August 20

British Market

Corrected to Date by Cable
Home Market Prices. Gross Tons at Works or Furnace.

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	32.99	7 5 0
Sheet bars	32.99	7 5 0
Wire rods	49.48	10 17 6
FINISHED STEEL		
Steel bars, England, ⅝ to 3-inch	42.13	9 5 0
Steel bars, England, ⅝ to 3-inch, for export	39.81	8 15 0
Plates, ship, bridge and tank, England	40.95	9 0 0
Plates, ship, bridge and tank, England, for export	39.81	8 15 0
Plates, ship, bridge and tank, Scotland	40.95	9 0 0
Plates, ship, bridge and tank, Scotland, for export	39.81	8 15 0
Beams, England	40.95	9 0 0
Beams, England, for export	38.68	8 10 0
Beams, Scotland	40.95	9 0 0
Beams, Scotland, for export	39.81	8 15 0
Sheets, black, 24 gage	56.88	12 10 0
Sheets, black, 24 gage, for export	54.60	12 0 0
Sheets, galvanized, 24 gage	84.18	18 10 0
Rails, 60 pounds and over	40.95	9 0 0
Rails, 60 pounds and over, for export	38.68	8 10 0
Tin plate, base box, 108 pounds	5.23	1 3 0
Steel hoops	52.33	11 10 0
Steel hoops, for export	50.05	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	23.30	4 18 0
Hematite, West Coast, Mixed Numbers	22.75	5 0 0
Basic, Middlesbrough	22.75	5 0 0
No. 3 Foundry, Middlesbrough	22.75	5 0 0
No. 3 Foundry, Derby, Leicester, Nottingham	21.39	4 14 0
No. 3 Foundry, Northamptonshire	21.04	4 12 6
No. 3 Foundry, Staffordshire	23.30	4 18 0
No. 3 Foundry, Scotch	23.32	5 2 6
Ferromanganese, 76 to 80 per cent	81.90	18 0 0
Ferromanganese, 76 to 80 per cent, for export	84.18	18 10 0
COKE		
Yorkshire furnace	6.26	1 7 6
Yorkshire furnace, for export	10.24	2 5 0
Yorkshire foundry	7.96	1 15 0
Yorkshire foundry, for export	11.38	2 10 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	—*	100,000,000†
Foundry, No. 3, Oberhausen	—	100,000,000†
Bessemer Stahleisen, Siegen	—	100,000,000†
Foundry, No. 1, Oberhausen	—	100,000,000†
Luxemburg Foundry	—	100,000,000†
COKE		
Ruhr furnace	—	34,000,000
Ruhr foundry	—	34,000,000
SEMIFINISHED STEEL		
Billets	—	140,000,000
Sheet bars	—	155,000,000
Wire rods	—	155,000,000
FINISHED STEEL		
Standard rails	—	178,000,000
Merchant bars	—	180,000,000
Structural shapes	—	179,000,000
Ship plates	—	202,000,000
Medium plates, 3 to 5 millimeters	—	227,000,000
Sheets, below 3 millimeters	—	270,000,000
Tin plate		nominal
Plain wire	—	191,000,000
Bands and strips	—	224,000,000

All prices are f.o.b. furnace or mill.
*Dollar equivalents are misleading owing to the terrific depreciation of the mark at present.
†With German coke; where foreign coke is used quotations are higher.

On account of the occupation of the Ruhr these prices are largely nominal and cover domestic business only. Export prices are usually quoted, where deliveries can be made, in foreign currency according to the country of destination.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	24.73	445
Basic bessemer, Lorraine	21.95	395
Foundry, Longwy, No. 3, sand-cast	21.40	385
Foundry, Longwy, No. 3, chill-cast	21.95	395
Ferromanganese, 76 to 80 per cent	86.14	1,550
COKE		
French furnace	7.50	135
German furnace, f.o.b. frontier*	10.28	185
German furnace, f.o.b. frontier**	13.89	250
French foundry	8.06	145
SEMIFINISHED STEEL		
Blooms	28.34	510
Billets	31.68	570
Sheet bars	38.90	700
FINISHED STEEL		
Standard rails	33.35	600
Merchant bars	33.35	600
Angles	32.79	590
Normal beams and profiles	32.79	590
Plates, ship and tank, 10 millimeters and thicker	36.12	650
Plates, bridge and tank, 5 to 10 millimeters	37.24	670
Sheets, black, 3 millimeters	39.46	710
Sheets, blue annealed, 2 millimeters	44.46	800
Shafting, cold-drawn, 40 to 60 millimeters	72.24	1,30
Bars, 2 per cent nickel steel	100.04	1,800

All prices are f.o.b. furnace or works.
*Up to 50 per cent of normal requirements.
**Over 50 per cent of normal requirements.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	19.96	450
Basic open-hearth, Belgian	24.17	545
Gray forge, Belgian	11.97	270
Foundry, No. 3, Belgian	20.62	465
Foundry, No. 3, Luxemburg	20.84	470
Foundry, No. 3, Lorraine	20.84	470
SEMIFINISHED STEEL		
Blooms	26.39	595
Billets	27.72	625
Sheet bars	28.83	650
Wire rods	41.02	925
FINISHED STEEL		
Standard rails	31.05	700
Merchant bars	32.60	735
Normal beams and profiles	31.49	710
Plates, 5 millimeters and thicker	33.26	750
Sheets, black, 3 millimeters	37.70	850
Sheets, galvanized, 1 millimeter	82.05	1,850
Plain wire	53.22	1,200
Galvanized wire	66.53	1,500
Wire nails	55.44	1,250

All prices are f.o.b. furnace or works.

terial by a general withdrawal of any figure under the £8 ($36.56) basis. Some firms now ask £8 5s ($34.70) to £8 7s 6d ($38.27). The Scotch steelmakers have fallen into line on the £9 15s ($44.55) basis for angles and a reduction of 5 shillings ($1.14) per ton has also been declared in ship plates. There is some show of firmness by Midland steelmakers who are declining to sell below the £9 15s ($44.55) figure. One firm offered £9 10s ($43.41) a few days ago, turned down the business. Makers of high-speed steels and other special metals report more activity, a gratifying proportion of the business being with the United States.

Staffordshire is almost alone in meeting with keen competition from Belgium, under the head of No. 3 iron, used for nut and bolt making. Some good parcels have been bought by the black country factories, naturally preferring this material at £9 5s ($42.27) delivered as against Staffordshire iron at £11 ($50.27). The Staffordshire iron works are badly in need of orders, the only department showing any sign of life being that of marked bars, for which the price is maintained at £14 10s ($66.26). In a way, the maker of medium iron is penalized by the prosperity of the best iron maker since this is chiefly accountable for the recent advance of 7½ per cent in wages.

The sharp revival of the galvanized sheet trade has encouraged the hope that the iron and steel position may not be quite so bad as it appears. The big users of sheets and the exporting merchants rushed into the market with remarkable unanimity at the first upward turn of prices, with the result that no difficulty has been met with in maintaining the £18 15s ($85.68) figure, with occasional sales at £19 ($86.83). Indian buying has been a feature and a fair business has been done with South America. The makers claim to be comfortably situated well into the autumn. One element entering into price maintenance has been the higher price of spelter which has advanced about £3 ($13.41).

In the tin plate trade the recent settlement of labor troubles and the renewal of the stabilization scheme has encouraged a certain amount of new business, consumers relying on present quotations as reasonably stable for some time. Orders with the Continent have been chiefly to France, Holland and Scandanavia, and some moderate business has been done with Japan. The trade continues badly handicapped by the inability to arrive

at some reasonable settlement of the reparations question. The collapse of the mark has brought about cancellation of some business in hand with Germany, and there is insufficient confidence to encourage anything beyond small contracts with most European countries. The standard price continues at £1 3s 1d ($5.38) per box and semifinished steel is on the £9 2s 6d ($41.70) basis with the usual rebate of 7s 6d ($1.71). It is evident that South Wales is taking advantage to some extent of the cheaper steel from the Continent by virtue of its proximity to ports of easy access from European steel centers as are other British districts so favorably located.

German Prices Adjusted Automatically

European Special Service

DUSSELDORF, Germany, Aug. 9.—In a somewhat vain effort to cope with the continued depreciation of the mark, steel prices have been advanced by the German steel syndicate and open market quotations have followed suit. Billets now are quoted 12,960,000 marks, but this is equivalent to only $10 per ton. Other steel products are in proportion, shapes, bars and plates being 18,683,000 to 21,131,000 marks, equivalent only to 0.65c to 0.74c per pound. Evidently a proper quotation for finished steel at the present value of the mark would be about 60,000,000 marks per ton instead of 18,000,000 marks to 21,000,000 marks.

The extra for open-hearth quality, the quotations being based on ordinary basic-bessemer steel, has been advanced to 1,500,000 marks per ton, a matter of $1.15.

An effort is being made to adjust prices automatically with the exchange. The foregoing prices are based on the exchange of 200,000 marks for one Dutch florin. When payment is made the actual price paid over will depend on the quotation for the florin on that day, but the advance over the base price will be at a rate corresponding to only 50 per cent of the depreciation in the mark. That is, bars are quoted at a base price of 18,750,000 marks per ton with the florin at 200,000 marks, but if a florin becomes 300,000 marks, the price of bars becomes 23,400,000 marks instead of 28,000,000 which it should be if the full exchange depreciation were demanded by the sellers. It is apparent that this attempt to solve the problem represents only a half-way measure and that the base prices now being quoted will have to be advanced drastically before long.

German exports of iron and steel products in May were 135,605 metric tons compared with 143,212 tons in April, almost the same amount in March, and 209,965 tons in February. The continual decrease in German exports this year is due to the occupation of the Ruhr. Recent reports indicate that the allied authorities have granted permits for the export of only 30,000 tons of steel from the Ruhr district since January. Imports in May were 134,947 tons, or practically the same as the export. In April the imports were 154,288 tons and in March 107,205 tons.

Among the principal items exported in May were 42,456 tons of scrap, which could not be consumed locally on account of Ruhr conditions; 10,077 tons of semifinished steel; 15,215 tons of bars; 7284 tons of plates; and 6302 tons of sheets. Among the principal items imported in May were 22,350 tons of pig iron; 26,081 tons of semifinished steel; 43,044 tons of plates; and 13,364 tons of rails.

Welsh Tin Plate Trade Is Recovering

European Special Service

CARDIFF, Wales, Aug. 9.—After a heavy drop in exports there are signs that the Welsh tin plate trade is making another addition to its long list of recoveries. In May the exports of tin plate and sheets were averaging over 10,000 tons weekly, but June saw a decline to 9500 tons a week and since that time the figures show an accelerated decrease. The last week of July was abnormally below par, only 2698 tons of tin and terne plate and 456 tons of black plate and sheets being shipped.

There is a much better demand for galvanized sheets, and considerable purchases by South Africa, South America, India, and Australia have been reported. The Indian purchases include a consignment of 20,000 tons which was recently shipped. The price of sheets has

Sterling—$4.56

increased roughly £1 ($4.56) a ton to £18 15s ($85.51) f.o.b. At this figure many makers are well sold practically to the end of the year.

The base price of tin plate remains at the minimum of £1 3s 1½d ($5.28) a box, notwithstanding the fact that merchants think this figure too high. Complete quotations on tin plate are as follows: Cokes, 14 x 20 inches, £1 3s 1½d ($.28); cokes, quarters, £1 4s 3d ($5.54); cokes, 10 x 20 inches, £1 13s 9d to £1 14s ($7.71 to $7.76); cokes, 20 x 28 inches, £2 6s to £2 6s 3d ($10.50 to $10.56); ternes, 20 x 28 inches £2 2s 6d to £2 3s ($9.70 to $9.81).

Welsh tin bars still are to be obtained at the official minimum of £9 2s 6d ($41.62) per ton f.o.b., subject to the rebate of 7s 6d ($1.73) per ton to tin works in the stabilization scheme, which is not expected to alter its present prices this year. Bars can be bought from outside producers at £7 2s 6d ($32.75) a ton, f.o.b. mill.

Nickel is quiet at £125 ($570.00) per ton for home and export. Scrap prices now are as follows per gross ton: Heavy melting steel scrap, £4 to £4 5s ($18.24 to $19.39); bundled sheet scrap and shearings £3 10s to £4 5s ($15.96) to $19.39); steel turnings £3 12s 6d to £3 15s ($16.54 to $17.11); mixed wrought iron and steel scrap £3 15s to £4 ($17.11 to $18.24) for heavy, and £2 5s $10.27) for light material; heavy cast iron scrap £4 ($18.24); and good machinery scrap £4 5s ($19.39).

Japanese Steelworks Again Cut Prices

Foreign Special Service

TOKIO, Japan, Aug. 9.—The heat after the rainy season here is very intense, and in conjunction with the hardness of credits, exercises a restrictive influence on trade in the iron and steel market. The volume of business is unusually small.

Although the Japanese government has endeavored to improve the credit situation it has failed. More banks have failed. Financiers are extremely

Yen—$0.495

cautious. Moreover, the increasing efflux of gold in line with the adverse tendency of the country's foreign commerce indicates that conditions will remain unsatisfactory for some time.

In the pig iron market the average daily business at present is roughly 30 per cent less than in the same season last year. Tonnage business in steel is still scarce. The department of railways is about the only buyer in the steel trade.

More pig iron continues to arrive from British India, Korea and Manchuria. The visible stock of iron is larger than a fortnight ago. In the steel trade arrivals from Europe and America have fallen off. Consignments unloaded at Yokohama or Kobe are markedly smaller. Tin plate, however,

is an exception, as imports are increasing. Government steelworks have made another general revision of prices, reducing quotations 10 to 15 yen ($4.95 to $7.42) per ton. The new quotations are: 114 yen ($52.83) per ton for bars and sheets; 104 yen ($51.48) for plates; 116 yen ($53.82) for angles and 119 yen ($54.31) for channels. At this time in the pig iron market No. 1 Japanese is being quoted at 68 yen ($33.63) per ton; No. 2 at 63 yen ($31.18) and No. 3, 60 yen ($29.70). No. 1 Hanyang (Chinese) is quoted 63 yen ($31.18). Cleveland (British) is 85 yen ($42.07), nominally. In the steel market round bars are quoted at 4.35 yen ($2.15) per 10 kwamme. Flat bars are 4 yen ($1.98) per 10 kwamme; square bars, 4.30 yen ($2.12); plates, 4 yen ($1.98); sheets 8 yen ($3.96). Tin prices are very weak, American tin plate being 15 yen ($7.42) per 100 point case. Ten kwamme equal 82.67 pounds.

Exports from Middlesbrough Slacken

European Special Service

MIDDLESBROUGH, Eng., Aug. 10.—Export demand for iron and steel is dull. Shipments of pig iron and manufactured iron and steel from the port of Middlesbrough suffered in consequence of strikes at other British ports. Fewer vessels left the river owing to the uncertainty of getting their cargoes completed. Trade with India is proving a boon to manufacturers and heavier deliveries to Germany have helped to swell the export tonnage. To Germany 15,875 tons of pig iron was sent in July; to India 11,359 tons of steel, and to the United States, 2200 tons of pig iron. The total of foreign trade shipments was 24,674 tons of pig iron and 35,951 tons of steel, delivered to 40 overseas customers. Details of exports for July are given in tons in the following table:

Destination	Pig iron	Steel	Total
Belgium	1,412	97	1,509
Ceylon	10	431	441
China	160	1,451	1,611
Denmark	1,620	303	1,923
Egypt	35	5,999	6,034
France	216	327	543
Germany	15,875	309	16,184
Hong Kong	7	524	531
India	68	11,359	11,427
Italy	1,000	40	1,040
Japan	425	504	929
Natal	72	2,976	3,048
New South Wales	61	2,141	2,202
New Zealand	10	793	803
South Australia	....	1,467	1,467
Spain	175	253	428
Straits Settlement	187	685	872
Sweden	489	520	1,009
United States	2,200	....	2,200
Victoria	....	3,126	3,126
W. Australia	118	627	745
Other countries	534	2,019	2,553
Total	24,647	35,951	60,625

Pig iron quotations are weak. No. 3 Middlesbrough foundry, G. M. B., is obtainable at £5 ($22.90) with East coast hematite at the same price. Finished iron and steel prices also tend to fall. The repeated reductions in quotations have failed to tempt buyers. A fair amount of business is passing in ore. Rubio ore, best quality, stands nominally at £1 4s ($5.48) delivered, but that price can be shaded. During July 146,000 tons of ore was discharged at Middlesbrough, a drop of approximately 25,000 tons compared with the June total.

The freight market is dull in sympathy with the prevailing slackness. Iron and steel freights from Middlesbrough are as follows: To Antwerp 7s ($1.50); to Rouen, 12s, ($2.85); to Rotterdam, 9s ($2.05); to Galais 9s, ($2.05); to Havre, 12s 6d ($2.88); to New York, Philadelphia, or Boston, 14s ($3.25); and to San Francisco, Seattle or Vancouver, £1 6s 0d ($6.05).

A special meeting of the stockholders of the Pittsburgh Steel Co., has been called to vote on a proposal of the board of directors to increase the common capital stock from $14,000,000 to $19,000,000. According to reports it is proposed to distribute 35,000 shares of additional capital stock on the basis of one-quarter share of new stock for each share now held.

Sterling—$4.57

Scrap Prices Advancing

(*Continued from Page* 502)

while the district is open. Dealers generally are taking all attractive offers but are reticent to sell far ahead. Their action is based largely upon anticipated increased demand during next quarter. One steel company will take in heavy melting steel and is offering $18 to $18.50. Dealers, however, are reluctant to sell at these figures, their action being due more or less to the fact that the consumer in question is a heavy rejector of material whenever the occasion arises.

Price Advances Noted

Detroit, Aug. 21.—A note of firmness is evident in the local scrap iron and steel market among dealers. In some instances price advances were made due to inquiry and buying by consumers. Heavy melting steel and No. 2 railroad wrought are up $1 a ton, while hydraulic compressed bundles have been advanced $1.50 a ton. Forge flashings and turnings are stronger, prices ranging 50 cents to $1 a ton higher. Heavy cast and malleable and bushelings are unchanged but dealers report the market in these grades firmer.

Dealers point out the upturn in prices is due in a measure to some buying by Valley and Pittsburgh mills and from others who are ordering out tonnage purchased at higher values. Producers are not as inclined to press sales as they were a few weeks back. Yard men continue to complain of lack of business, but in some instances they report sales of bundled sheets and heavy melting steel at slightly above quotations of two weeks ago.

Consumers Still Out of Market

St. Louis, Aug. 20.—Aside from a limited revival of interest in cast grades the entire scrap iron and steel market continues dull. Consumers continue out of the market. Purchasing has been on a hand-to-mouth basis. However, melters are urging shipments on contracts and it is apparent reserve stocks are considerably reduced as contrasted with a month or six weeks back. The number of rejections by foundries has dropped. Recent liberal offerings by the carriers have been readily absorbed. Since Aug. 1 yard stocks have been materially augmented and now are larger than in several months.

Jobbing foundries and specialty makers have been booking a fair volume of orders. Stovemakers are planning to increase operations. New offerings by the railroads include the following lists: Wabash, 2700 tons; Rock Island, 4500 tons and Missouri, Kansas & Texas, 2000 tons.

Yards at Capacity

Atlanta, Ga., Aug. 21.—The local scrap iron and steel market has been quiet recently due to the fact most buyers have purchased to the capacity of their yards. There is a considerable tonnage of nearly all items in Atlanta yards at this time.

New Business Small

Birmingham, Ala., Aug. 20.—New business is not large but considerable scrap iron and steel is moving in this district. Quotations are weak and uncertain. Yards are well supplied.

Receivers Are Named For Lucey Corp.

Receivers in equity have been appointed for the Lucey Mfg. Corp., maker and distributor of gas, water and oil well equipment, with main offices in New York City and branches in several cities. The action against the corporation was instituted by the Manhattan Rubber Mfg. Co. with a claim of $3840. The liabilities stated in the papers amount to $2,215,000, consisting of $1,315,000 of 10-year 3 per cent convertible sinking fund notes and of general debts aggregating $900,000. The defendant corporation consented to the receivership as a step toward a reorganization of the business. The corporation owns all the capital stock of the Lucey Mfg. Corp. of Texas and Tennessee and of the General Supply Corp. of Casper, Wyo., and 80 per cent of the capital stock of the General Tool Corp. of Los Angeles, Cal., and of the Lucey Mfg. Corp. of Mexico.

Northwest Demand Better

Repair Work Increases as Midsummer Season Draws Near Close—Coast Dealers Watch Freight Rates with Interest

SEATTLE, Aug. 18.—Both manufacturers and jobbers on this coast are closely watching developments in the iron and steel industry with reference to inauguration of the eight-hour shift as well as the effect of increased water freights and lower overland freight rates. While it is not expected that these changes will have any drastic effect on conditions in Washington and Oregon the trade is on the alert for any adjustments that may be found expedient. Steel mills on this coast have been on the eight-hour shift for years so that reduction of hours elsewhere will not affect labor conditions here.

With the midsummer season approaching its close the market has a better tone. Repair work, requiring much steel and iron, is showing activity again while building continues at high speed and improvement work is under way on a large scale.

Pig Iron and Coke

This market shows no change from last week. Buying is limited but the heavy stocks of pig iron purchased during the spring and early summer are being consumed so that new orders must necessarily be placed soon. In the meantime prices are down to $36 for the best grade of Glengarnock, delivered here duty paid. Importers believe the situation basically sound and they anticipate a considerable volume of business during the last four months of the year. The coke situation shows no change whatever, about the normal quantity of local and Fernie coke being consumed.

Bars, Plates and Shapes

Prices are unchanged. Jobbers report an increased demand for these items while some large houses state that there is little interest on the part of the buying public. No large tonnages are being turned over. Notwithstanding conditions of the last month no great weakness has developed in bars or structurals. The Pacific Coast Steel Co. is operating two open-hearth furnaces and its rolling mills, with a fair volume of orders on the books. The mill is maintaining its price of 3.20c for merchant bars while reinforcing steel runs somewhat higher, usually being figured on lump sum basis for each job. The local mill has recently taken on a number of reinforcing jobs running from 100 to 200 tons each, much of it for bridge and road work. There is no export inquiry from Japan although China is in the market for small lots of reinforcing steel one order for 200 tons having been placed sinced a week ago and another for 100 tons being in abeyance. Demand for plates is principally for the lighter gages, 3/8 to No. 10.

Other Finished Material

While some price cutting on sheets has been reported within the last two months, jobbers in Seattle and Tacoma this week have raised black sheets from 5.75c to 6.00c and galvanized from 6.75c to 7.00c. These new prices bring these gages into line with blue annealed and were actuated by a desire to harmonize prices on the three grades as well as to absorb the increased water freights. Due to price cutting among dealers in this territory sheet prices here are still 25 cents under those prevailing at Portland and throughout Oregon. Sheets are moving in limited volume and have not developed the buying interest expected at this season. Jobbers report increasing demand for bands, hoops, building hardware, nails and other items. Stocks have generally been replenished during the heavy buying by jobbers and large quantities of iron and steel, shipped by water last month under the old freights, are still en route. Consequently stocks are fairly well assorted. The volume of business thus far this month shows a satisfactory gain over July according to the large jobbing houses.

Old Material

The market is still weak and has given no indications of immediate improvement. There is little interest in scrap. Buyers are not seeking supplies and they are usually able to purchase what is offered at bargain prices. The going rate for miscellaneous steel scrap is reported at $11.50 while No. 1 cast iron is quoted at $20 to $22 according to grade. There is no surplus stock accumulated here, dealers as a rule seeking quick turnover and they assert that present conditions offer no inducement for holding stocks. The export inquiry for scrap is confined to special items, horseshoes and wagon tires being in some demand in China where better grades of steel are reworked into tools and implements. Japan appears to be entirely out of this market for the time.

July Coke Production Improves Slightly

Washington, Aug. 21.—The production of by-product coke improved slightly during the month of July according to the United States geological survey. The total output is estimated at 3,255,000 net tons, an increase of 89,000 tons over the figure for June. Reports from the 69 plants now in existence show that 64 were active and five were idle. The output from the active plants was 87.1 per cent of the total capacity of all plants.

Unlike by-product coke, the production of beehive coke continued to decline steadily and the output was 1,582,000 tons against 1,755,000 tons in June. This was a decrease of 173,000 tons, or nearly 10 per cent, and the rate of production was less than the monthly average in any recent year except 1921 and 1922.

The total output of all coke in July was 4,837,000 tons against 4,921,000 tons in June. Thus it is seen that in spite of the decrease at beehive ovens, the rate of production of all coke exceeds the average monthly rate during the years for which such records are available. The monthly comparative record for July coke follows:

	By-product coke	Beehive coke	(Net tons) Total
1917 Mo. average.	1,870,000	2,764,000	4,634,000
1918 Mo. average.	2,166,000	2,540,000	4,706,000
1919 Mo. average.	2,095,000	1,638,000	3,733,000
1920 Mo. average.	2,565,000	1,748,000	4,313,000
1921 Mo. average.	1,646,000	462,000	2,108,000
1922 Mo. average.	2,374,000	669,000	3,043,000
May, 1923.....	3,328,000	1,829,000	5,157,000
June, 1923.....	3,166,000	1,755,000	4,921,000
July, 1923.....	3,255,000	1,582,000	4,837,000

(a) Excludes screenings and breeze.

The steady decline hitherto reported in the rate of beehive coke production continued during the week ended Aug. 11. The total output is estimated at 327,000 net tons on the basis of cars reported loaded by the principal coke-carrying railroads. This decrease of 18,000 tons as compared with the week preceding was shared by all states except West Virginia, Washington, and Utah. The comparative weekly output of beehive coke follows:

	Aug.11, 1923(a)	Aug.4. 1923	Aug.12, 1922
Pennsylvania and Ohio	270,000	282,000	83,000
West Virginia.....	21,000	21,000	6,000
Ala., Ky., Tenn. and Ga.	16,000	19,000	8,000
Virginia	10,000	12,000	6,000
Colorado and New Mexico	5,000	6,000	6,000
Washington and Utah	5,000	5,000	3,000
United States total....	327,000	345,000	112,000
Daily average.....	55,000	58,000	19,000

(a) Subject to revision.

The output of soft coal showed a gain in the week ended Aug. 11 following the decline during the week of President Harding's burial. The production, according to preliminary estimates, was about 10,700,000 tons.

Radio Company Formed

The Gates Radio Co., Cincinnati, has been incorporated with a capital $1,000,000. The company will manufacture all kinds of radio equipment. L. J. Ainsworth, accountant for many years connected with the Newport Rolling Mill Co., is president and general manager of the company. The factory manager and chief radio engineer will be Howard A. Gates.

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Studying Europe's Short Day

IT IS difficult to forecast the actual cost or effect of the substitution of the short day for the 12-hour day. It is likely that in the present process of changing from two to three shifts, manufacturers will be obliged to proceed by the rule-of-thumb method. In other words, little will be definitely known of costs until the three-shift plan has been in operation over a period of time.

However, there have been a number of precedents by which some idea can be gained of the probable effect of the present change. In this issue Mr. Estep, European manager of IRON TRADE REVIEW, analyzes the 8-hour day in Europe. He shows that following the armistice when European iron and steel plants changed from the two to the three-shift system, serious practical and psychological difficulties arose. Most of the problems met were virtually identical in all European countries and the uniformity of this experience indicates that possibly the same difficulties will be confronted by American steelmakers in their present experiment.

First, European developments indicate that once established, the short workday is likely to be continued even though it may not be wholly successful. European experience also seems to prove that the effect of the 8-hour day on labor relations and the morale of workmen is contrary to that claimed by the social reformers. In Germany the ministry of labor reported that the worker's interest and energy decreased following the adoption of the 8-hour day. Similar reports were obtained by the League of Nations labor office from Belgium, Poland, Italy, Czechoslovakia, Finland, Austria and Serbia. Only in Great Britain is there clear evidence that the three-shift system has resulted in employes showing increased interest in their work.

One of the advantages of the 8-hour day, according to European experience, is a slight increase in production. In Great Britain reports from 10 open-hearth plants covering three years under the 12-hour system and three years under the 8-hour system indicate the tonnage produced per 24 hours increased from 3 to 13 per cent, the average increase being 7 per cent. The furnace crews were paid on the usual tonnage basis and piece work rates per ton were not advanced when the shorter hours were adopted. Naturally production costs are increased and the output per man per day is decreased. Moreover, in nearly every European country where it has been adopted the 8-hour day has caused a reintroduction of the 7-day week.

From these observations of European conditions, it may be assumed that many problems will have to be solved before the short day is generally established in America on a smoothly running basis. Therefore, the more the public knows of the difficulties encountered, the more it will appraise and appreciate the task producers have undertaken in eliminating the long shift.

Trade Balance Again Favorab'e

A FEW months ago when the balance of trade swung against this country economists supplied the academic explanation that the world had begun to pay off its huge debt to the United States in goods. For three months, during March, April and May, this flow of international trade was running largely against this country. In June a balance was struck, with exports and imports virtually even. The figures for July just made public by the department of commerce show a definite swing back to a favorable balance for the United States.

During the month exports amounted to $310,000,000, while imports were $284,000,000. The excess of exports over imports was $26,000,000. This was the largest margin of shipments over imports since December. With the tide of trade so unmistakably reversed, it becomes evident that the economists were somewhat hasty in their conclusions. A much more temporary and fluctuating cause was behind the rising tide of imports

this year than that of world debt settlement. The real secret is to be found in the great industrial activity of the early spring.

With factories and mills running at topspeed, raw materials were in enormous demand. It was in these raw materials, such as silk, rubber and many other important commodities and in food, such as sugar and coffee, that the major portion of the increase in imports took place. In addition, the demand for finished goods stimulated gains of imports of these articles also. At the same time the poverty of Europe has caused foreign sales of American products to decline.

With the lull in buying during the summer in this country it was only natural that imports should drop off. From the high point in March of $398,000,000 July imports show a decline of 28 per cent. In the same period exports are off only 9 per cent. Some of the prophets of coming depression were using the heavy imports of a few months ago as one of the factors which would cause the curves of business to turn down. It is now seen that this so-called unfavorable factor has been eliminated. Eventually the world must begin to pay off its debt to this country, and the only way it can do so is by sending goods. The world is in too unsettled a state just now, however, for such an extensive movement as this to have begun.

Equipment for Road Building

SEVERAL months ago an editorial in these columns on the subject of the use of steel in road building attracted an unusual amount of attention in the public press and from readers of IRON TRADE REVIEW. Because of this interest, an attempt has been made to gather more information regarding the use of metal products in road building, the result being the article beginning on page 525 of this issue.

The tonnage of iron and steel actually going into highway construction at the present time is comparatively small in relation to that consumed by the railroads, building industry and other standard consuming groups. However, based on the consumption for the same purpose 10 years ago, the present figures are rather remarkable. Moreover there is every indication that the next ten years will find a still further growth in this direction. In fact it would not be surprising if by that time steel is used not only for reinforcing the concrete slabs but also for protecting parts of the surface from shock and abrasion. As pointed out previously in these columns cast iron plates already have been used on a limited scale in this manner.

That road building will become a rather important industry is assured by the highway traffic provided by the 12,000,000 automobiles now operated in the country. The present system of highways is inadquate for this traffic and even if the production of motor cars were to be seriously curtailed, the need for better highways still would make it necessary to construct thousands of miles of improved roadways.

Because of this condition manufacturers in the metal working industries will do well to keep posted on the needs of road builders. While an active campaign of highway construction would mean a great deal to producers of certain kinds of steel, it would mean still more to the forging shops, machine shops, foundries and fabricating shops and similar establishments.

This is true because as time goes on modern mechanical equipment will play an increasingly important role in the road building operations.

Industry Needs Fewer Padlocks

AN ATMOSPHERE of mystery has enshrouded the tool steel industry for many decades principally because those associated with the production end have felt it necessary to the success of their companies to maintain absolute silence in connection with the type of equipment installed and the various steps in the manufacturing process. In many cases visitors are not permitted to enter the works' enclosure for fear they might apprehend some particular feature that perhaps might be used to advantage at other plants.

A producer well known in tool steel circles, found the percentage of rejections in his plant were too high and upon investigating traced the source of difficulty back to the grinding and chipping departments. Research work in connection with the two processes developed the fact that grinding was more suitable to this particular practice than chipping and he immediately placed this department on a piece-work basis. The workmen are required to grind so many pounds of steel per turn and for every pound ground in excess of the requirement, they receive a bonus. While the cost in this connection was found to be slightly higher than by the method formerly used, the product, once shipped, remains in the consumer's hands.

On the other hand this same producer was experiencing difficulty in the rolling of bars and upon combing the field learned that a competitor overcame a similar condition at his plant but that his rejections still were high due to his method of defect removal. Both parties concerned exchanged the privilege of plant visitation and the weak spots of the grinding and rolling operations were discussed at length with the result that the seat of the trouble in both instances was removed without the necessary expenditure for research work.

Many specific instances might be mentioned where the quality of the product has been bettered after prolonged investigation of the various steps in the manufacturing process and at considerable expense which could have been obviated had the open door policy prevailed. The conditions under which a producer is justified in keeping practice or equipment secret are rare.

Business Sentiment Improves

Prospects Brighten for Increased Trade Activity in Autumn—Buying Demand Now Broadening—Cotton Mill Operations Increased—Wheat Is Stronger—Summer Lull Passing—Trade Balance Favorable

BY JOHN W. HILL, FINANCIAL EDITOR

BUSINESS and financial sentiment has shown pronounced improvement recently. This is due to the brightening prospects for an increased trade activity in the fall. Buying demand continues to broaden in such important lines as iron and steel and cotton goods. The undertone of securities is stronger. Wheat, cotton, corn and live stock have displayed greater firmness. In the textile industry, deep curtailment of output and continued heavy consumption, have started buying on such a scale that mill operations have begun to increase.

The fact has now dawned upon busisess men that the much-talked-of summer lull has been remarkable for its mildness. It was only severe by contrast with the great burst of trade speed at the beginning of the year. By all normal standards business has continued extremely active this summer. July employment gained slightly in the aggregate, although some industries like tires, have slowed down considerably. Car loadings have continued at unprecedented levels above the million-mark weekly. With the purchasing power of wages 18 per cent above the 1920 peak, consumption naturally has been heavy. This is reflected in large retail and mail order sales.

The Monthly Business Index in the Business Trend shows a drop in July. This was due to lower figures for cotton consumption, prices, pig iron output, and building. Coal production and freight traffic gained. Wholesale prices as measured by the bureau of labor statistics declined 1¼ per cent in July. Since the peak in April this index is down 5 per cent. The level is now 51 per cent above 1913. One year ago it was 55 per cent above. Living costs advanced 1.1 per cent in July according to the National Industrial Conference board. They are now 61.9 per cent above 1914 against 105 per cent above at the peak in 1920 and 55.6 per cent above one year ago.

One event of great sentimental significance has been the increase in wheat values. This has come in the face of reports of large surpluses in this country and in the world. It probably reflects the reduced crop estimates here and in Canada and the report of 15 per cent cut in winter wheat acerage in the United States. The general effect of the drop in wheat has been overdrawn, when it is recalled that this crop constituted but 6 per cent of the total farm income. As shown by the Business Trend the balance of trade has swung again in favor of this country. July exports exceeded imports by $26,000,000. This robs the pessimists of a favorite argument. The country no longer is being "overrun" by great excess of imports.

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Long Time Trend of Wages	Aug. 3

The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One mo. ago	One year ago	Average 1913
Business failures	312	268	287	415	300
Cash ratio Fed. Res. System	77.3	77.3	76.5	80.2	...
Loan rate, 4-6 Mo. N. Y. (per cent)	5	5	5	4	6
Average 25 ind'l shares	$104.81	$101.71	$105.02	$103.68	$58.19
Average 25 rail shares	$57.23	$56.08	$59.33	$67.64	$82.97
Av. 40 bonds	$76.64	$76.20	$76.91	$81.92	$93.00
Car loadings Aug. 4)	1,033,130	1,041,044	854,000	851,351	*935,730
Bank debits 248 (week ended cities (000 omitted)	$7,420,079	$8,300,588	$9,273,000	$8,277,046	.....

*1920

FOREIGN EXCHANGE (Demand)

	Normal	Aug. 20 (close)	Week before	Month ago	Year ago
Sterling	$4.86	$4.54	$4.56	$4.59	$4.47
Francs	19.3c	5.55c	5.54c	5.98c	7.96c
Lira	19.3c	4.30c	4.26c	4.37c	4.53c
Marks	23.8c	0.00014c	0.0003c	0.0002c	0.08c

MONTHLY COMPARISON

	July	Month before	Year ago	Monthly average 1913
Dodge building Awards in 36 states	$315,024,000	$371,034,000	$415,000,000	$82,126,000
Business failures: Number	1231	1358	1753	1336
Liabilities	$35,721,188	$28,678,276	$40,010,313	$22,732,000
Exports	$310,000,000	$320,000,000	$301,157,000	$207,000,000
Excess of gold imports	$27,406,000	$18,885,000	$42,343,000	†630,716
Bureau of Labor Price Index	151	153	156	100
Bradstreet's Price Index	138.7	141.5	130.5	100
Economist's British Price Index	4182	4301	4396	2717
Cost of Living Index	161.9	160.1	155.6	100
New incorporations	$724,920,000	$1,403,336,000	$634,259,000	$172,301,000
Railroad net earnings	*$87,742,000	$89,999,600	$76,271,000	$59,900,000

†Monthly average excess exports. *June.

The Business Trend

August 23, 1923

TRADE TODAY, TOLD BY IRON TRADE CHARTS

GENERAL SITUATION—Monthly Business Index continues decline in July; pig iron production, cotton consumption, building construction and Bradstreet's prices, basic factors in the Index, show decreases; coal output and railroad traffic gain; level highest for any previous July, since 1918; Trade confidence returning.

FOREIGN TRADE—July brings definite change in American trade balance after months of excess of imports over exports; exports were $310,000,000 and imports, $284,000,000.

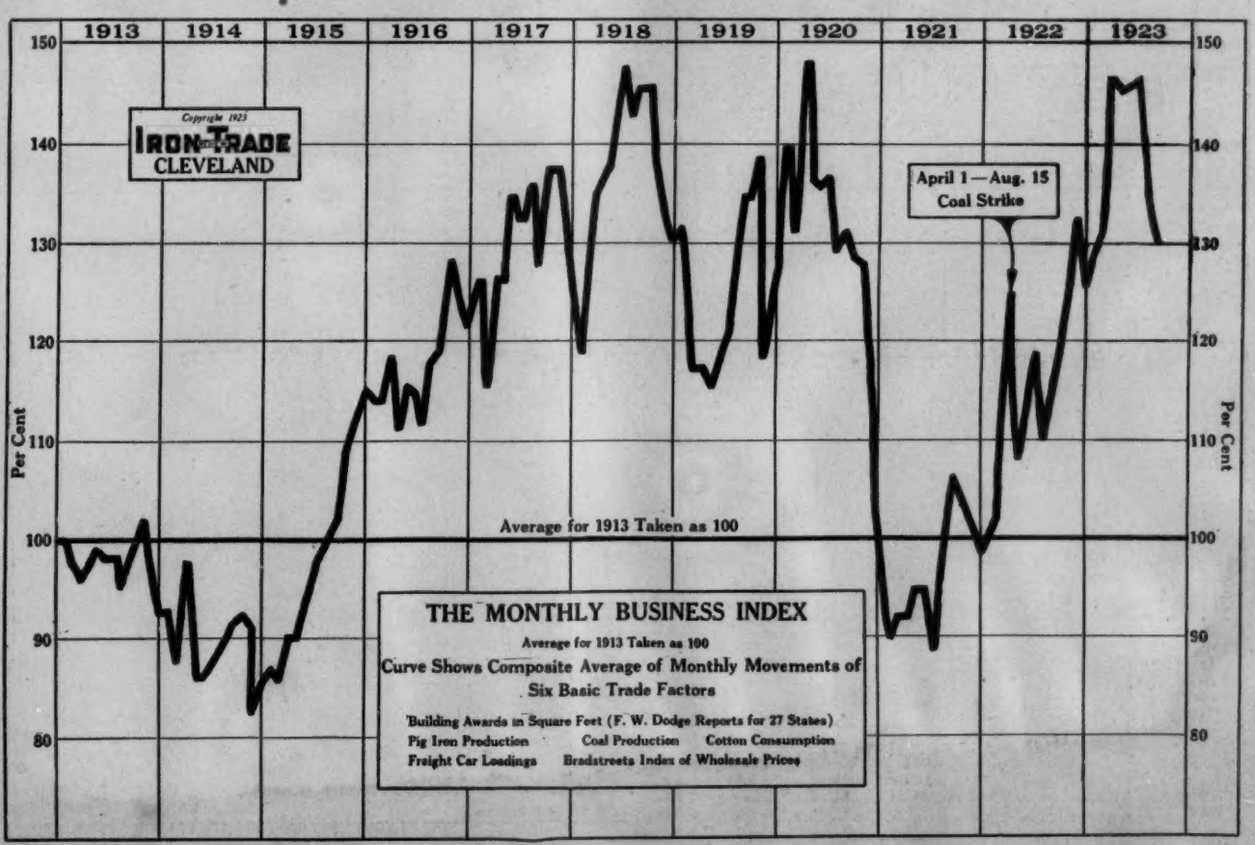
FOREIGN EXCHANGE—Weakness rules in European exchanges as deadlock over Ruhr and reparations continues; francs lose 25 per cent of value since Ruhr occupation; at record low point.

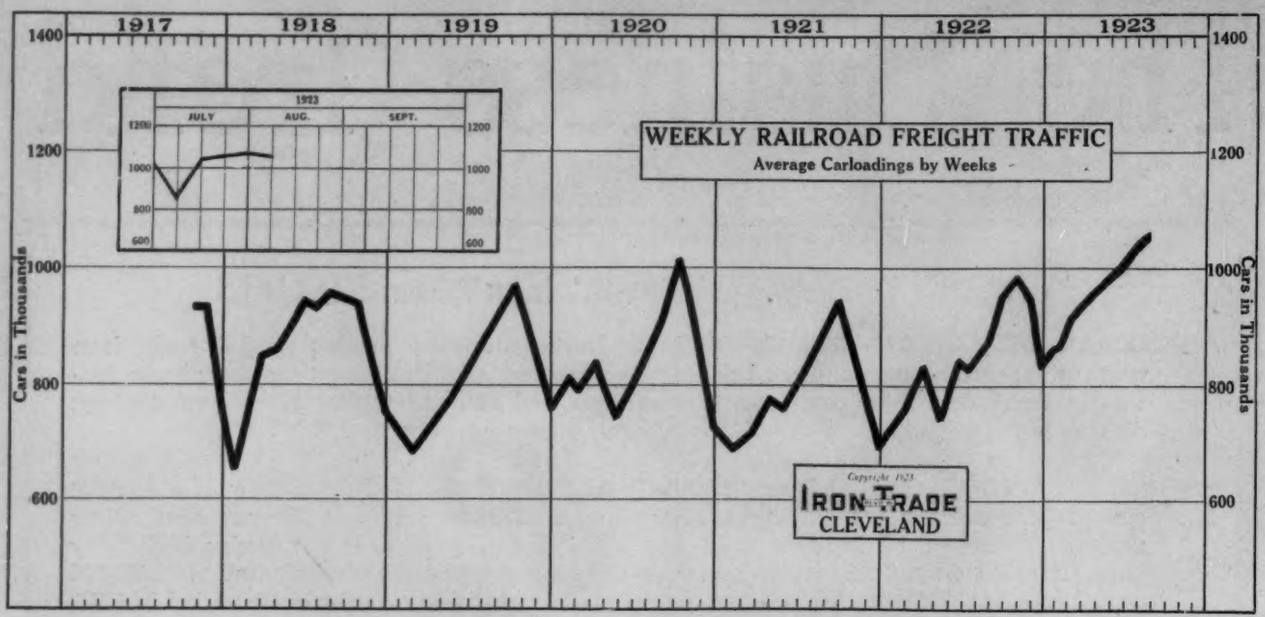
BUILDING—July construction awards make third monthly decline; total of 42,573,400 square feet in 27 Northeastern states shows drop of 10 per cent from June; 35 per cent under April peak.

AUTOMOBILES—July automobile output of 318,000 cars was 15 per cent below June and 18 per cent under high May record; seven months total of 2,344,000 cars 68 per cent over same period in 1922.

FREIGHT MOVEMENTS—Car loadings for week ended Aug. 4 of 1,033,000 show slight drop from preceding week; figure was second highest on record, however; net car surplus still large.

RAILROAD EARNINGS—Class 1 railroads in June earned $87,742,000; net was at rate of 5.47 per cent on estimated property valuation; compares with 6.33 per cent in May and 4.86 per cent in June, 1922.




1917
1918
1919
1920
1921
1922
1923
1923
JULY
AUG.
SEPT.
WEEKLY RAILROAD FREIGHT TRAFFIC
Average Carloadings by Weeks
Cars in Thousands
1400
1200
1000
800
600
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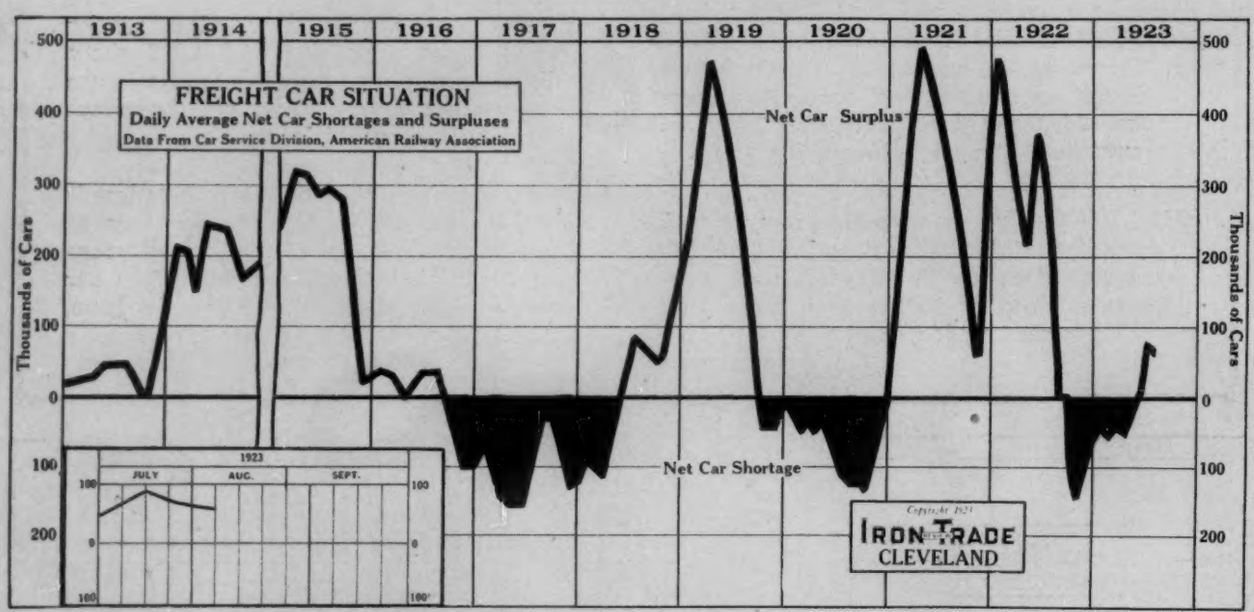
1913
1914
1915
1916
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1918
1919
1920
1921
1922
1923
FREIGHT CAR SITUATION
Daily Average Net Car Shortages and Surpluses
Data From Car Service Division, American Railway Association
Net Car Surplus
Net Car Shortage
Thousands of Cars
500
400
300
200
100
0
100
200
1923
JULY
AUG.
SEPT.
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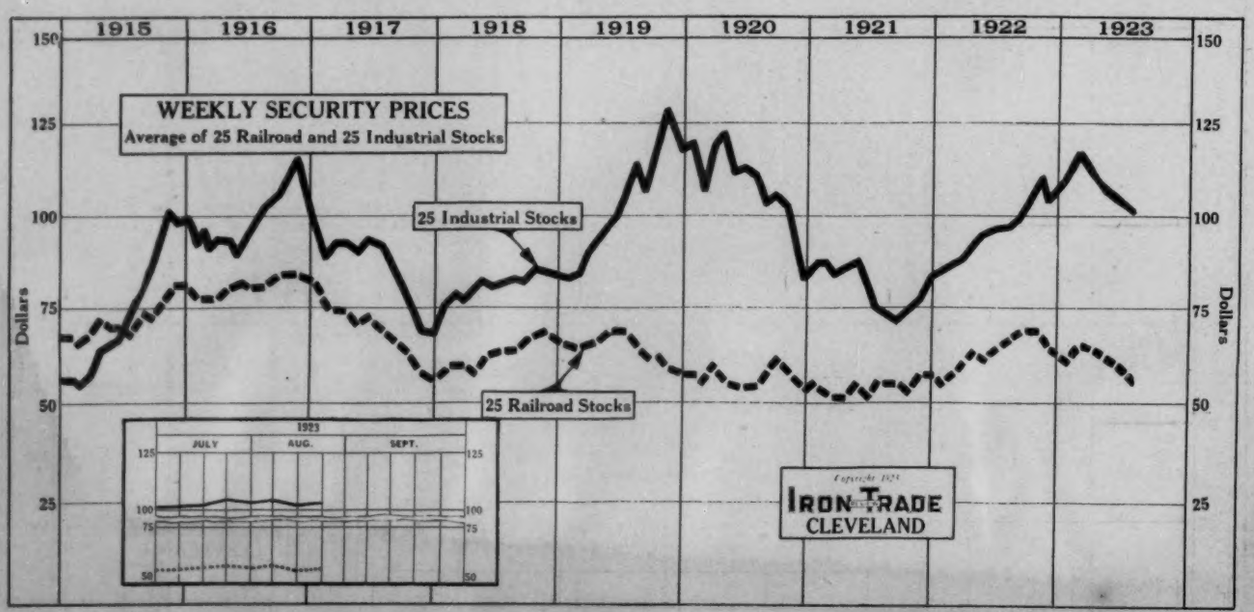
1915
1916
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1918
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1920
1921
1922
1923
WEEKLY SECURITY PRICES
Average of 25 Railroad and 25 Industrial Stocks
25 Industrial Stocks
25 Railroad Stocks
Dollars
150
125
100
75
50
25
1923
JULY
AUG.
SEPT.
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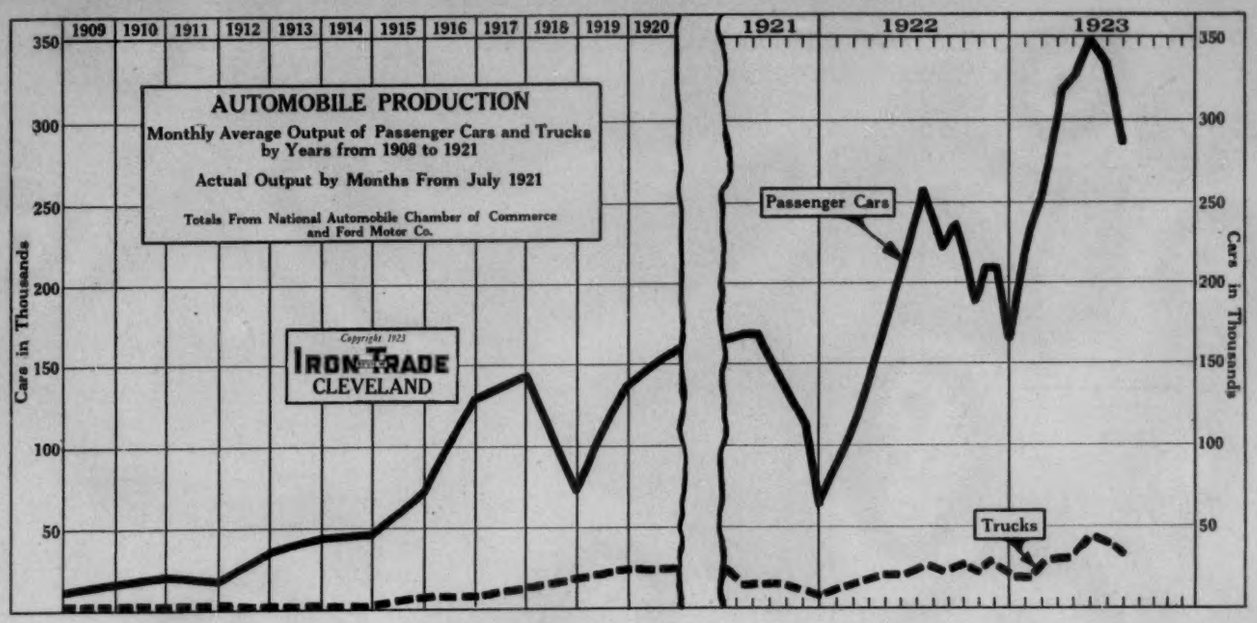
1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920
1921 1922 1923
AUTOMOBILE PRODUCTION
Monthly Average Output of Passenger Cars and Trucks by Years from 1908 to 1921
Actual Output by Months From July 1921
Totals From National Automobile Chamber of Commerce and Ford Motor Co.
Passenger Cars
Trucks
Cars in Thousands
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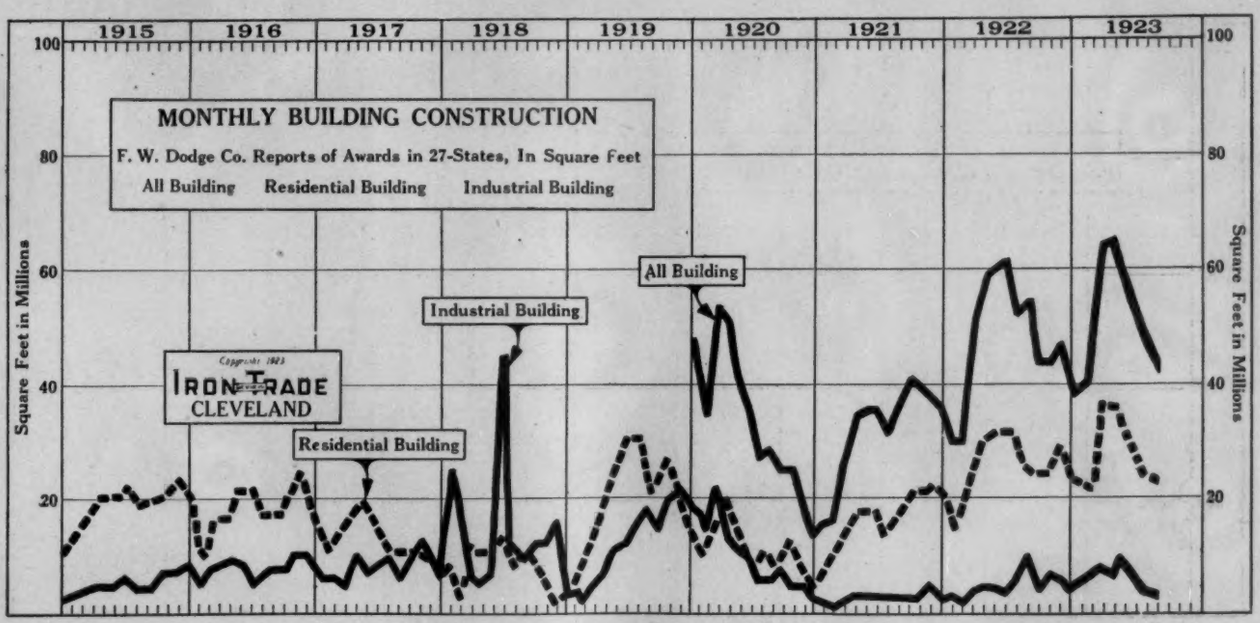
1915 1916 1917 1918 1919 1920 1921 1922 1923
MONTHLY BUILDING CONSTRUCTION
F. W. Dodge Co. Reports of Awards in 27-States, In Square Feet
All Building Residential Building Industrial Building
All Building
Industrial Building
Residential Building
Square Feet in Millions
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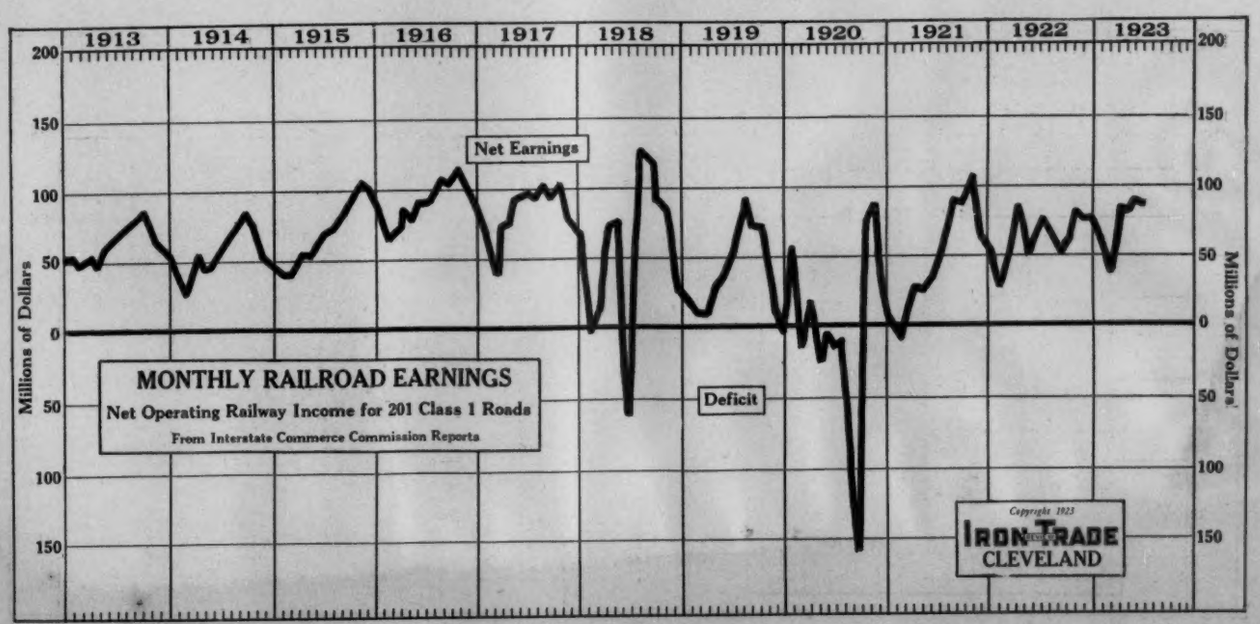
1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923
Net Earnings
MONTHLY RAILROAD EARNINGS
Net Operating Railway Income for 201 Class 1 Roads
From Interstate Commerce Commission Reports
Deficit
Millions of Dollars
Copyright 1923
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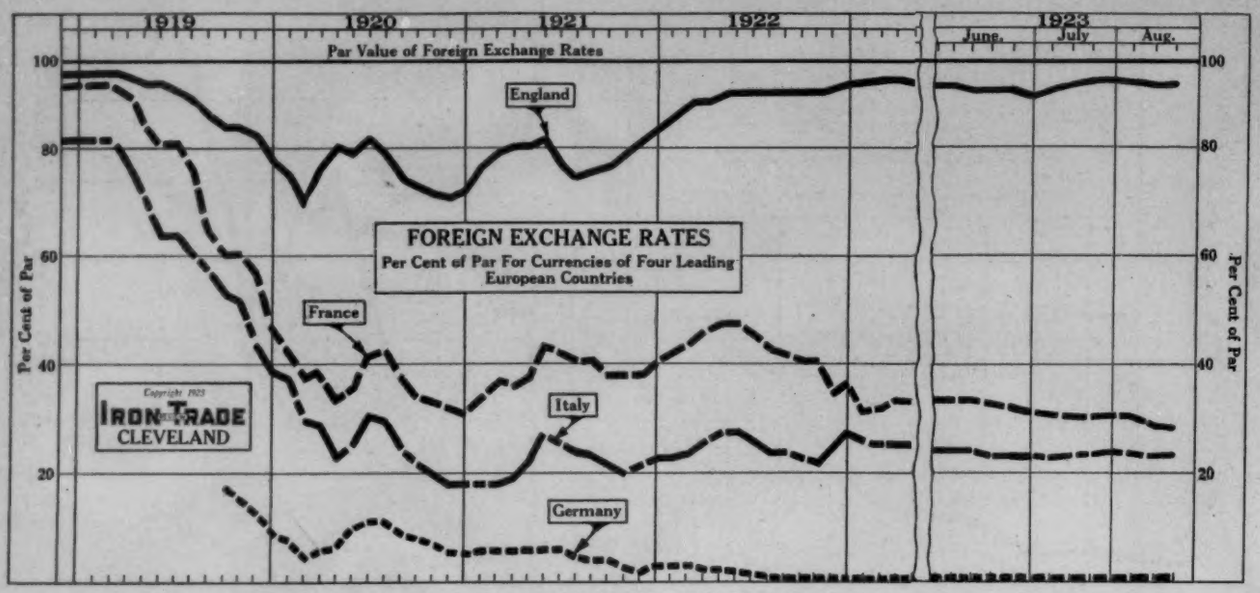
1919
1920
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1922
1923
June.
July
Aug.
Par Value of Foreign Exchange Rates
England
FOREIGN EXCHANGE RATES
Per Cent of Par For Currencies of Four Leading European Countries
France
Italy
Germany
Per Cent of Par
100
80
60
40
20
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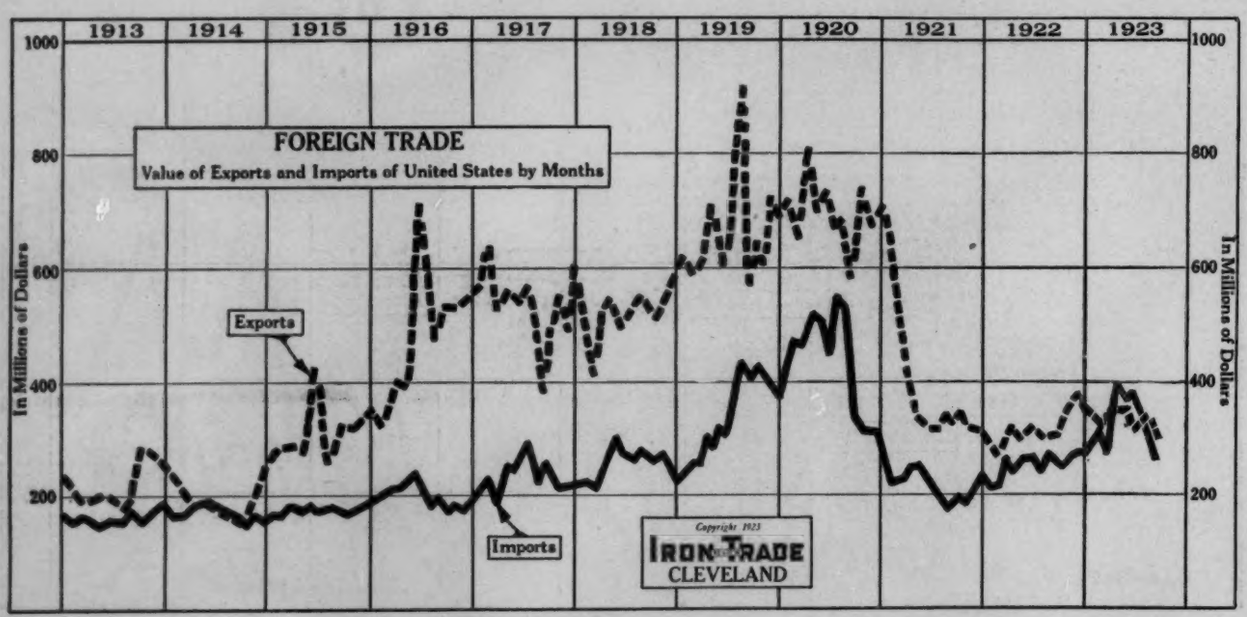
1913
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1923
FOREIGN TRADE
Value of Exports and Imports of United States by Months
Exports
Imports
In Millions of Dollars
1000
800
600
400
200
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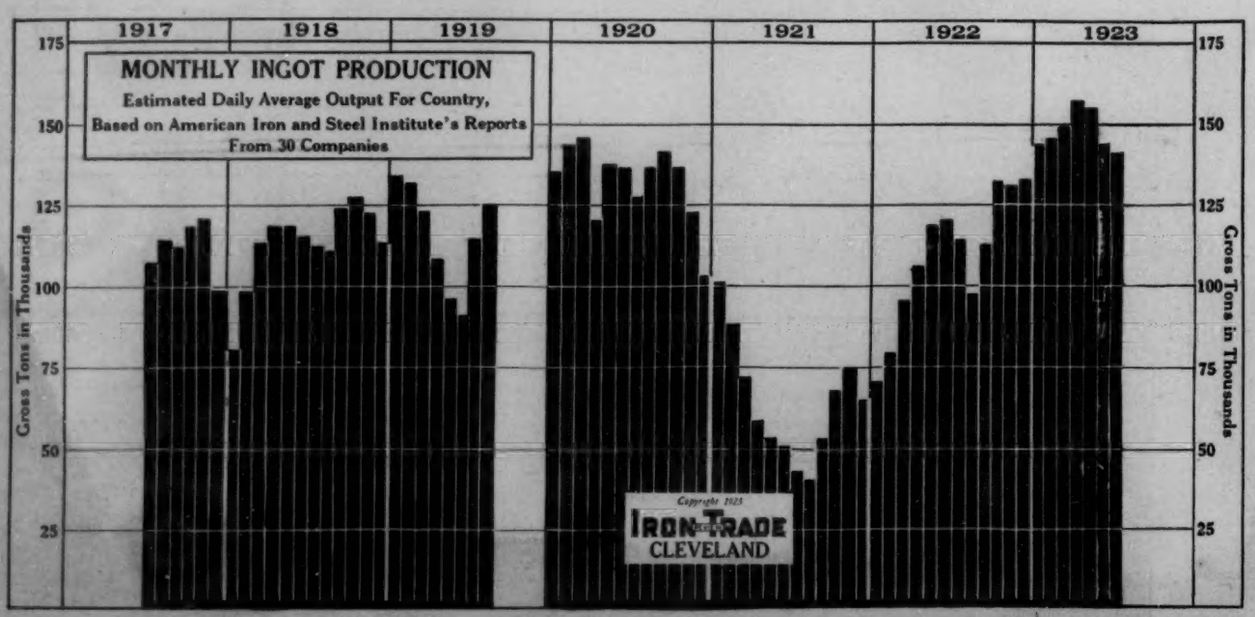
1917
1918
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1922
1923
MONTHLY INGOT PRODUCTION
Estimated Daily Average Output For Country,
Based on American Iron and Steel Institute's Reports
From 30 Companies
Gross Tons in Thousands
175
150
125
100
75
50
25
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Thousands of miles of Modern Highway Will Be Built, Steel Bar or Wire Fabric Reinforcement Being Used

Steel Plays New Role in Highway Construction

BY FRANK G. STEINEBACH

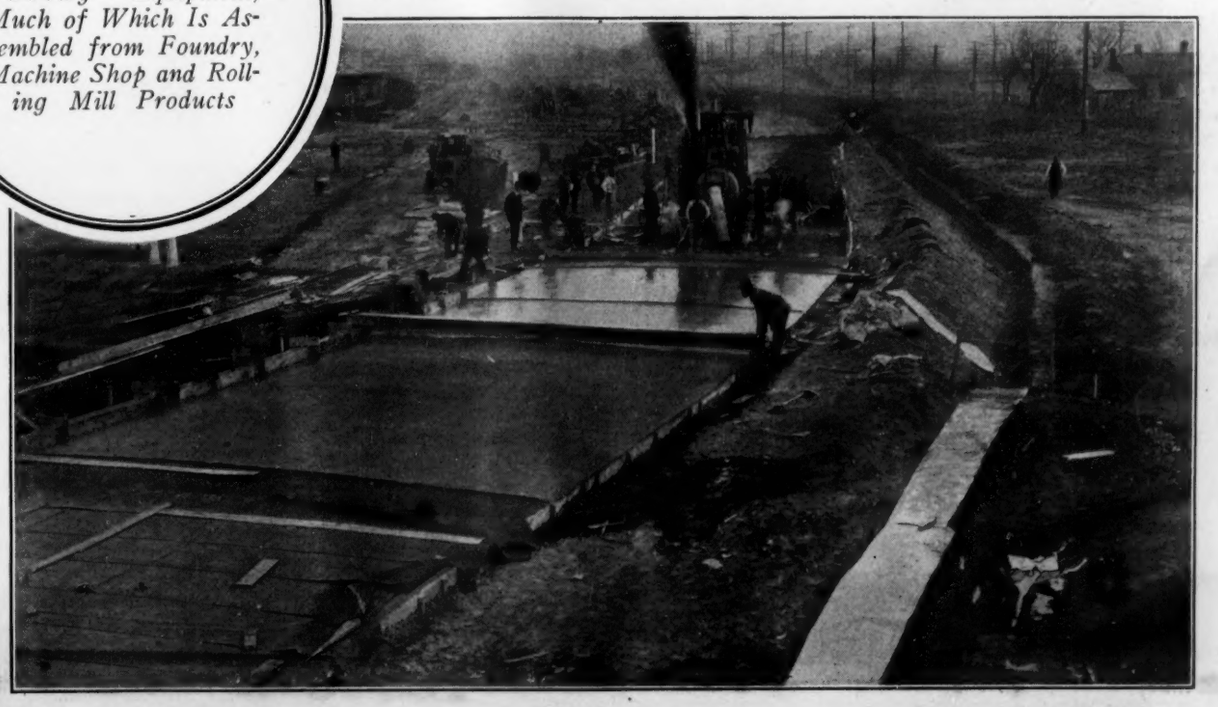
THE fascinating history of transportation is one of achievement. From the time more than 2000 years ago when Appius Claudius Caecus built the Appian way to connect Rome with the southern Italian peninsula, through the eventful dawn of the railroad era, into the stirring days when Gould, Harriman and Hill vied for supremacy in the control of transcontinental lines, past the heyday of the electric interurban and down to the present reign of the American automobile—through all of these phases of development, the romance of transportation has been written in deeds of courage, vigor and greatness.

The author is editorial representative at Cleveland of IRON TRADE REVIEW.

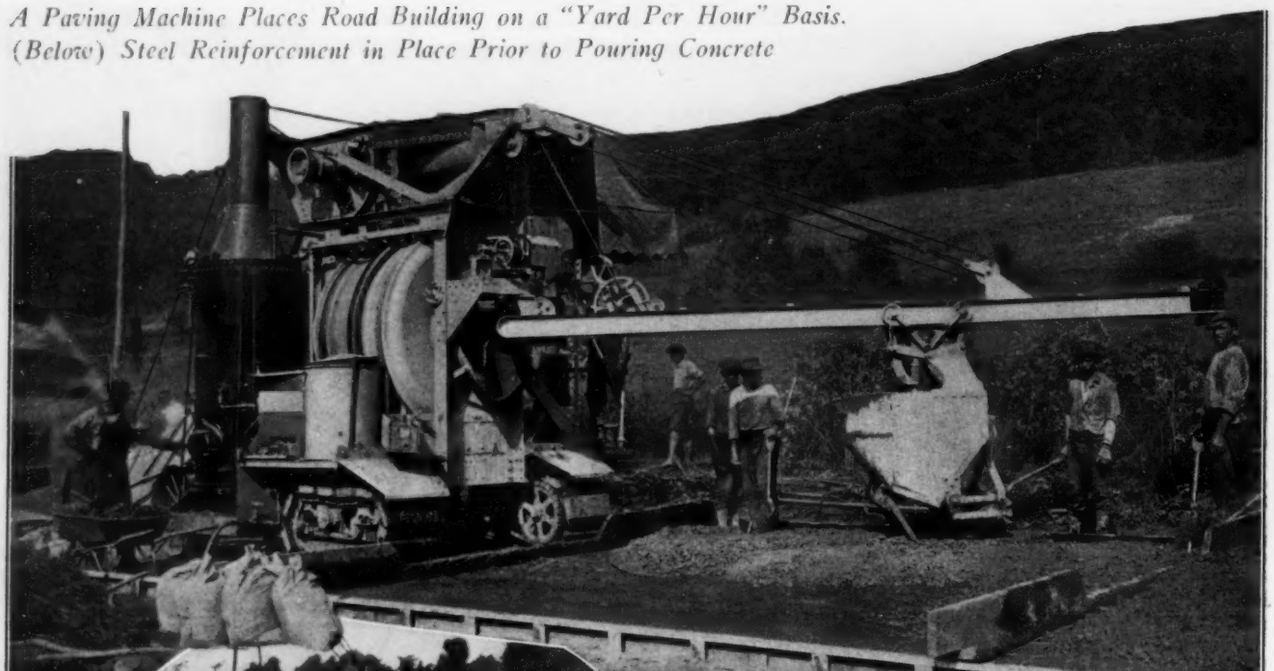
But the story of transportation is not finished. Another chapter—perhaps not so thrilling as that of the railroad conquest of the west, but as fully charged with the record of achievement—remains to be written. In it will be recorded the details of a great transformation by which the present cobweb of American roads intended for light and infrequent traffic shall be repaired, rebuilt, extended and co-ordinated into a great, united system of highways adequate for the requirements of millions of trucks and automobiles.

Many changes will take place before this chapter can be added to the book.

A Modern Road Contractor Employs Labor Saving Equipment, Much of Which Is Assembled from Foundry, Machine Shop and Rolling Mill Products



A Paving Machine Places Road Building on a "Yard Per Hour" Basis. (Below) Steel Reinforcement in Place Prior to Pouring Concrete



The American public, now only partially converted to the policy of spending millions for good roads, will have to be fully convinced of its wisdom. Politicians must help rather than obstruct in the proper distribution of funds voted for highway construction. Federal, state, county and township authority must be co-ordinated. Engineers must continue their research to the end that the most suitable designs may be determined. Contractors must use efficient equipment and seek the best methods of construction so that the cost of roadbuilding may be kept at the lowest point commensurate with good workmanship. Once a unit of highway is completed, a system of patrol and maintenance must be established to avoid the results of the present practice which permits a road to become a menace to safe traffic before it is repaired.

Fortunately most of these reforms already are under way. Public opinion is becoming more enlightened, engineering data is more conclusive and contractors are better equipped than heretofore. Because the signs are favorable to the inauguration of a program of highway construction on a grand scale, the time is ripe to study the relations of this new industry of roadbuilding to the metal working industries and to the producers of iron and steel.

How will an impetus in highway construction affect the manufacturers of machinery, tools, fabricated steel, etc? What products will be in demand, and in what quantities? The answers to these and many other questions may prove to be interesting to the industry.

At the outset it may be said that many new uses for iron and steel in roadbuilding have been discovered in the past few years. Briefly, products of the iron, steel and metal working industries are used for contractors' equipment; for culverts and other purposes in the preparation of the subsoil for a pavement; for steel reinforcement for retaining walls, abutments, the concrete pavement itself, curbs, expansion joints, etc.; and for highway signs, signposts, fences, guard rails, etc.

Rapid strides are being made in the design and construction of road-building equipment. Not many years ago it was general practice in many parts of the country to construct roads by means of plow, scraper, dump-wagon and drag. Today a large highway job brings into use steam, gasoline or electric shovels, locomotive cranes, drag-line excavators, self-dumping motor trucks, tractors, steam engines and gasoline engines, air compressors, concrete mixers with distributing equipment, grading machines, steam rollers, and standard steel concrete forms. On exceptionally large contracts, narrow-gage portable track, industrial locomotives and dump cars are employed.

Attention Paid to Repairs

Similar progress has been made in methods of repairing roads. The old familiar plan whereby the farmer "worked out" his taxes by scraping and dragging the roads in his township during idle periods of the year is giving way to a patrol system supervised by federal,

state or county engineers, and involving the use of modern equipment.

Steam shovels recently have assumed a place of first importance in the road-building industry. Their present popularity is due to the fact that far-sighted builders have scaled down their locomotive-type models, mounted them on caterpillar tractors and in other ways adapted them to road work. The demand for this type of shovel is evidenced by the fact that with few exceptions all manufacturers of railroad steam shovels recently have brought out smaller models suitable for highway construction.

Power Shovels Employed

The latest statistics indicate there are approximately 20 builders of steam, gasoline and electric shovels in the United States. These companies purchase motors, electrical control apparatus, gasoline motors, motor accessories, tank and boiler steel, fabricated boilers, steam gages and boiler fittings, crankshafts, connecting rods, drop forgings, all kinds of castings, shafting, steel cable, pipe and pipe fittings, structural steel, manganese steel dipper points, brass and bronze bushings, corrugated sheet roofing, sheave wheels, ball bearings, bolts, nuts, rivets, etc.

As in the case of steam shovels, locomotive cranes have been adapted to the requirements of road building. Mounted on broad-wheeled trailers or caterpillar trucks and equipped with self-closing excavating buckets or drag-line buckets, these cranes find extensive use in cutting and back-filling on rough terrain. There are approximately 42 builders of small locomotive cranes and about 32 manufacturers of excavating buckets. The crane builders are consumers of practically the same materials as are used in the construction of steam shovels. Chain, plates, sheets, rivets, and manganese steel castings are the principal materials employed in fabricating buckets.

It is impossible to estimate the extent to which motor trucks and gasoline tractors are used in the construction of roads. However, it is safe to say that these vehicles have practically replaced horse-drawn wagons and scrapers on large jobs. For maintenance and for new work in certain localities horses and mules still are used. Undoubtedly they will continue to prove more economical than power-driven equipment in exceptional cases.

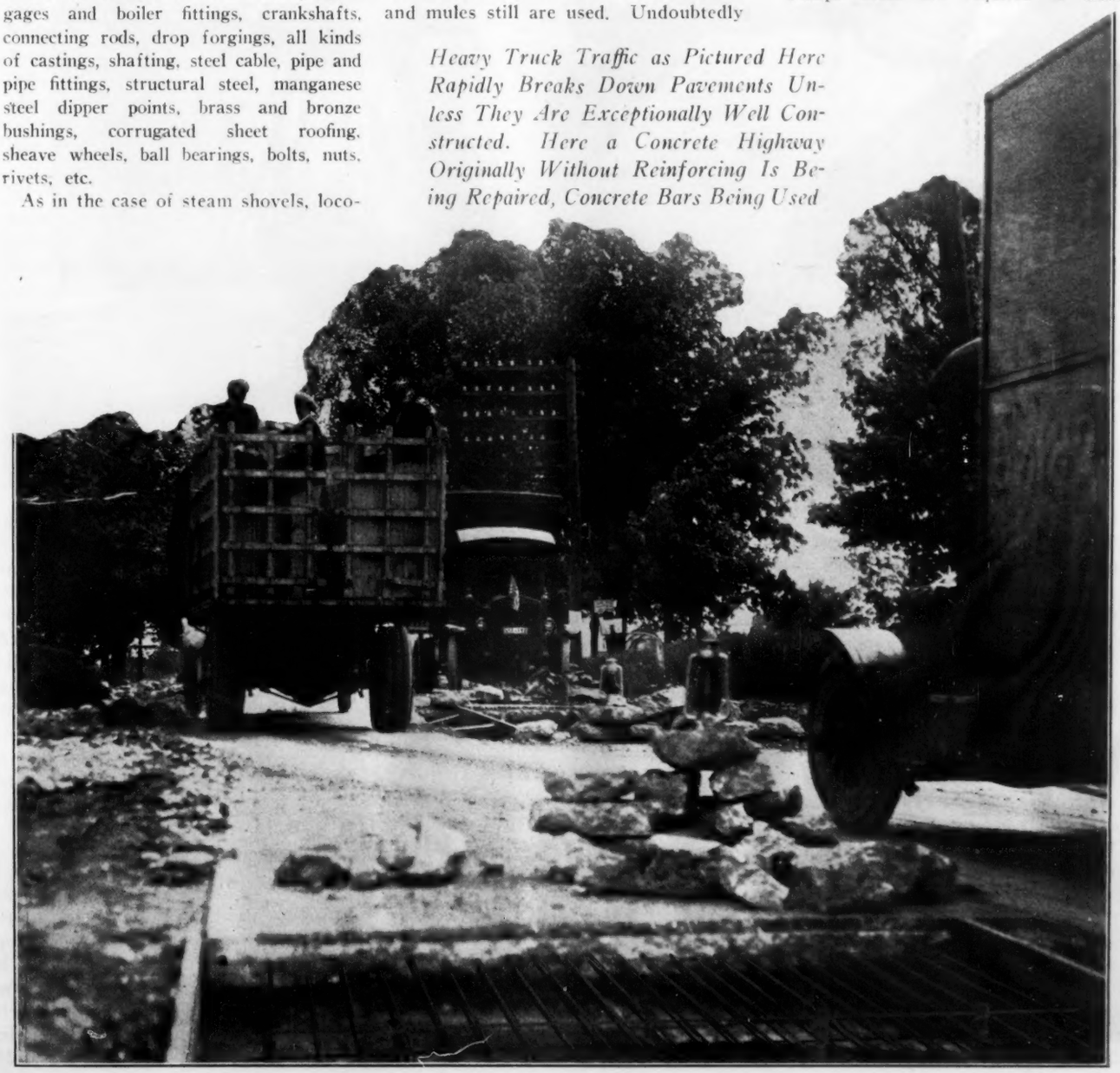
Steam and gasoline engines play important parts in modern highway construction. Seldom used independently, they usually are built into the machines for which they furnish power. Their principal applications are in connection with air compressors, concrete mixers and water pumps.

Compressed Air Now Used

Compressed air is a comparatively recent entry in the field of road work. Thus far its use has been confined principally to the operation of pavement chippers, which are used for breaking up the top layer of road preparatory to resurfacing. In blasting through rock to make way for a new road, of course, compressed air fulfills its well known mission in the operation of rock drills.

Pumps often are required to assist

Heavy Truck Traffic as Pictured Here Rapidly Breaks Down Pavements Unless They Are Exceptionally Well Constructed. Here a Concrete Highway Originally Without Reinforcing Is Being Repaired, Concrete Bars Being Used



in draining low land, to bring water to boilers from distant sources of supply, or to flood subsoil before the first layer of concrete is put down. In many of the smaller contracts, however, hand pumps and water carts serve these purposes.

Steam rollers, once considered as equipment employed only on city streets, now are frequently used in the general field of highway construction. They provide the only effective means of pounding down earth in fills and smoothing the subsoil prior to the placing of concrete. In surfacing asphalt, they are practically indispensable when large areas are involved. Approximately 23 builders of steam and gasoline road rollers are listed in the latest directories. Boiler plate, rivets, forgings, machine bolts, shafting, castings, bushings, valves, pipe fittings, steam packing, grates, sheets, and small shapes are the principal products entering into the construction of rollers.

Modern Paving Machine Is Intricate

Although the great improvement in the design of concrete mixers has been brought about largely through the spectacular expansion in the use of concrete for buildings, piers, bridges and foundations, the requirements of road-building have been considered of sufficient importance by builders of mixers to prompt them to develop special equipment for that purpose. As a result, the modern apparatus for preparing concrete for highway construction is literally a paving machine rather than a mere mixer.

Its chief elements are a boiler and engine or gasoline motor, a mixing drum with power-driven charger and pouring device, and a monorail distributing arm and carrier for conveying the mixed concrete to the pavement. Many of these machines are self-propelled. The extent of the manufacture of concrete mixing equipment is indicated by the fact there are 96 companies engaged in building these machines.

Steel Supplants Wood For Forms

Perhaps the most recent application of steel to road contractor's equipment is found in the development of steel road forms. The forms usually are of 3/16-inch material, cut in suitable lengths of 12 feet or less and provided with joints, stakes, etc. No less than five companies are known to be engaged in the fabrication of steel road forms, while about a dozen make steel forms for concrete culverts.

Although the principal items of contractors' equipment have been mentioned in the foregoing paragraphs, manufacturers interested in the purchasing power of the roadbuilding industry should not overlook the large quantities of relatively small articles that are consumed. The list includes steel picks, shovels, hoes, crowbars, axes, sledges, hammers, trowels, scythes, brush hooks, hatchets, saws, wrenches, wheelbarrows, galvanized steel pails, lanterns, pipe, gasoline and water tanks, steel tape and levels.

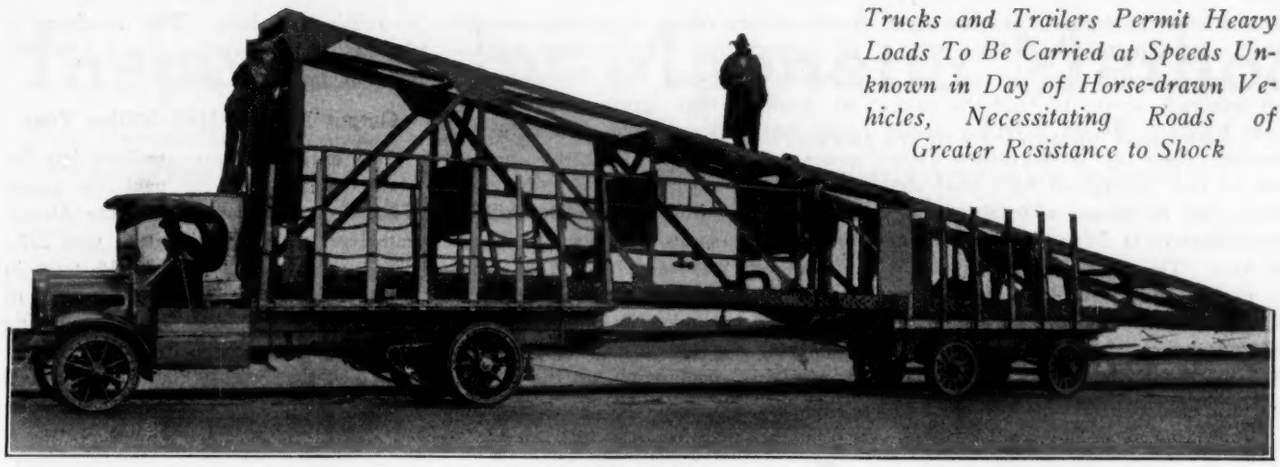
It is obvious from the foregoing that builders of contractors' equipment draw largely upon the foundries, forge shops, steel fabricating establishments, machine shops and machinery supply houses for their needs. In the case of materials actually entering into the construction of the roads, by far the greatest volume comes from the cement, gravel and clayworking industries. Although the manufacturers in these fields are regular customers of the metal industries, we now are chiefly interested in the steel products used directly in highway construction.

Iron and steel sheets for corrugated culverts and steel reinforcing bars for retaining walls and the pavement proper constitute practically all of the steel now employed in road building. Statistics show that slightly over 2 per cent of the more than 3,000,000 tons of sheets manufactured in 1921 were fabricated into culverts or flumes. Approximately 78 companies are engaged in the production of corrugated metal culverts, a few of these also being listed as the manufacturers of sheets. Zinc enters into the manufacture of culverts, these products receiving a heavier coat of this protective covering than any other widely used galvanized articles.

The Steam Shovel Mounted on Caterpillar or Similar Truck and Locomotive Crane Equipped With Clam-Shell or Drag-line Bucket Now Are Used Extensively in Road Construction

Spend Millions for Road Steel

Practically every state in the union is now using reinforcing for road slabs, with several of them, including Pennsylvania and California, using it to a greater extent than others. Data compiled by the United States department of agriculture, bureau of public roads, shows that in 1921 for 1350



Trucks and Trailers Permit Heavy Loads To Be Carried at Speeds Unknown in Day of Horse-drawn Vehicles, Necessitating Roads of Greater Resistance to Shock

federal aid projects involving 7480 miles of road at a total cost of $112,325,302, reinforcing steel for bridges and road slabs was used at a cost of $2,375,966. This figure shows that the cost of reinforcing material was 2.1 per cent of the total cost of the road. This amount was divided as follows: Structural steel, $976,571; expanded metal, $50,619; and reinforcing rods, $1,348,806. The figures have not been subdivided to show the percentage of material going into structures and road surface.

Various types of steel fabric and bars have been used in the past as a means of supplying the needed tensile strength. The amount of steel used, in most cases, has not been based on calculated stresses, but has been determined by results gained under service. Steel has not been used in sufficient quantities to prevent cracking altogether, but has served in a way to minimize the breaking up of the slab. Many types of reinforcing materials have been used by highway engineers, many basing selection on results obtained in severe service. Smooth or deformed bars, expanded metal, welded or woven mesh fabrics and structural shapes are some of the combinations that have been used. The weight of material used varies all the way from 20 to 150 pounds per 100 square feet. Recently, however, the amount of reinforcing used has been increased.

Use of Wire Mesh

According to reports on concrete roads by the bureau of roads, reinforcing composed of wire mesh or expanded metal and deformed bars should be placed in both crosswise and longitudinal directions, and should be placed not less than 2 inches from the finished surface of the pavement. The reinforcing should extend to within 2 inches of all joints, but must not cross any joint. The reinforcement should preferably be placed at both the top and bottom of the pavement. Wire fabric can be shipped in either rolls or sheets, depending on the handling methods to be used on the job.

Data taken on roads constructed in 1921 shows that the use of this type of reinforcing will add from 30 to 60 cents per square yard to the cost of the pavement. The additional cost is no doubt responsible for the fact that concrete pavements generally have not been reinforced in the past.

Another form of reinforcing consists of ¾-inch bars placed halfway between the top and bottom of the pavement, approximately 6 inches from the edges and completely around the

Even the Small Road Job Requires Mechanical Equipment, Including Gas Engines, Mixers, Trucks, Pumps, Etc.

slab. Reinforcement of this type gives added strength to the edges where the cracks usually begin, and on a soft subgrade serves to hold the pavement together should cracking occur. Another form of reinforcement consists of two corrugated bars fabricated into a unit by means of chairs spaced approximately at 3-foot intervals along the bars. The chairs are made of No. 16 gage band steel, and formed to meet requirements of standard designs for 6, 7 and 8-inch road slabs. This material is manufactured in units to meet the required specifications and these units are assembled by means of an assembling frame or template with the top and bottom longitudinal bars fastened to the frame by means of spring wire clips or other fastening devices. The mat produced by this method of assembly is rigid enough that it may be carried from the place of assembly to the position in the road without disturbing the relative position of the bars.

Old Rails for New Roads

Reference was made in the introduction of this article to the respective roles of railroad building and highway construction in the history of transportation. In this connection the increasing use of concrete bars for roads brings out a significant example of conservation. The weight and dimensions of steel rails has increased so rapidly that great tonnages of rails put down a comparatively few years ago are too light for present day rolling stock. These rails either are relaid on infrequently used sidings or sold for scrap. A few years ago, a method was developed by which these rails are slit longitudinally into three parts—head, web and base. Thus by this process of reclamation, an appreciable proportion of the cast-off steel of the railroads finds its way back to the service of transportation in the form of reinforcement for roads.

In a number of states, the use of rail steel bars has been prevented by a clause in the specifications stating that the bars shall be "rolled from new billets." Manufacturers of rail steel have given wide publicity to the physical properties of their product with the result that in a number of instances federal and state commissions have opened their specifications to rail bars. The educational campaign that is spreading information regarding rail steel is being conducted by the Rail Steel Products association comprising nearly a score of manufacturers, seven of which specialize in reinforcing bars. The members of the association produce about 1,000,000 tons of rail steel annually.

Output Exceeds Half Million Tons

The output of concrete bars has increased rapidly in the past few years. The production reported by the American Iron and Steel institute was 227,228 tons in 1921 and 575,816 tons in 1922. There are 60 manufacturers of concrete bars, including those making rail steel bars.

While the largest tonnages of steel are used for the purposes of reinforcing concrete slabs, steel finds other uses in road building. In an endeavor to control the longitudinal cracks which might develop in concrete roads, several state highway commissions are embodying in their standard designs a sheet metal expansion joint at the center of the road. This joint is continuous throughout the length of the road, and in most cases extending through the entire thickness of the slab. While constructing the block of concrete a temporary joint cap is placed on the top of the metal sheet. After the concrete has set the cap is removed and the space filled with asphalt.

Steel bars are also used to protect

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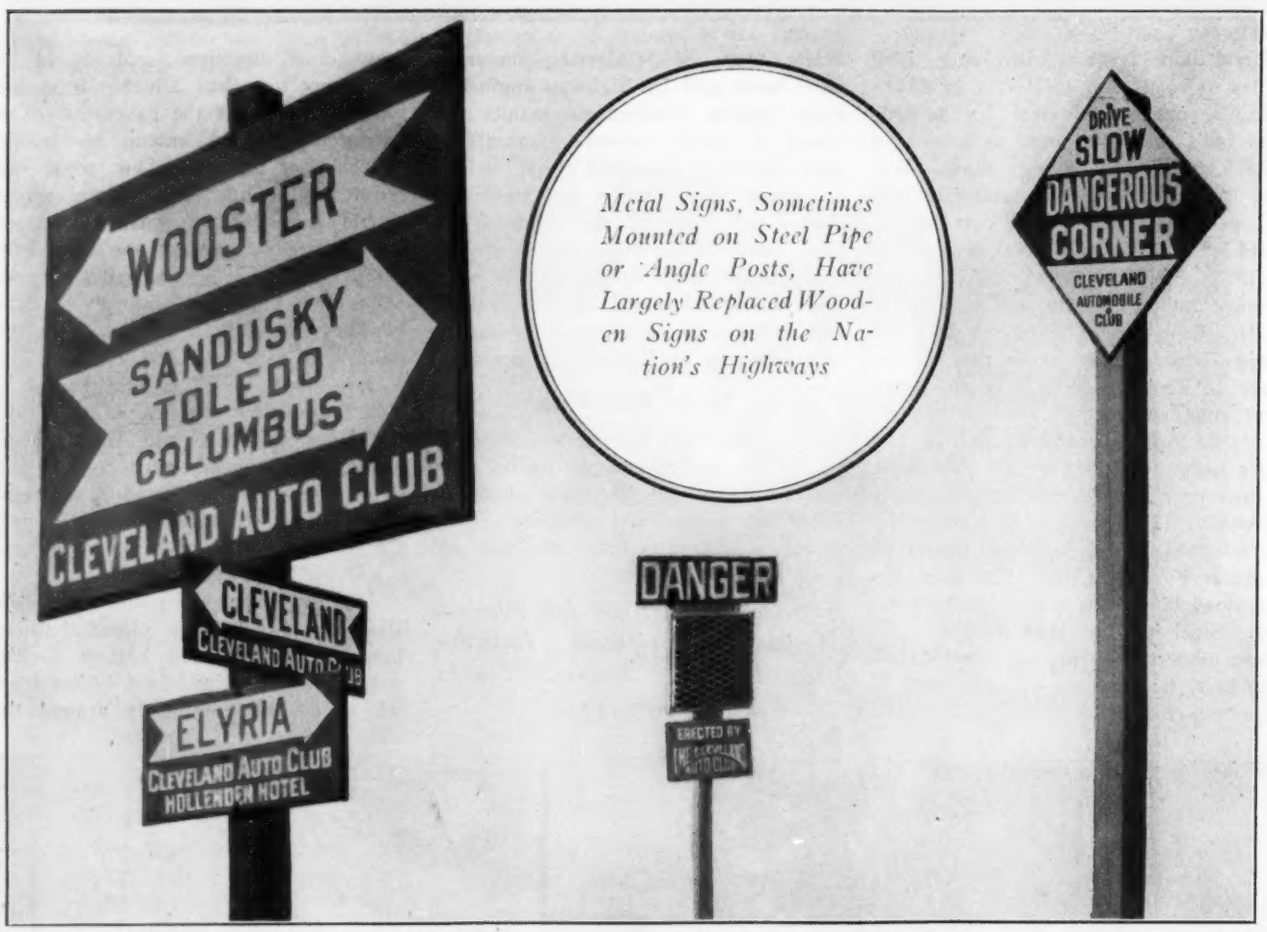


Metal Signs, Sometimes Mounted on Steel Pipe or Angle Posts, Have Largely Replaced Wooden Signs on the Nation's Highways

Inspecting by Magnetic Method

Nondestruction Is a Principal Advantage of This Newest Form of Testing Iron and Steel—Other Advantages Exist—Method Is Particularly Applicable to Small Tools in Which Heat Treatment Causes Wide Variation

BY A. V. De FOREST

INSPECTION is provided to discover before use whether an article is suited for the purpose intended. In general, this is done by comparing the sample with a standard known to have given good service. Seldom is there any direct measurement of a given physical property which can be used to estimate the real value of a specimen. Physical measurements usually serve only as a basis of comparison and the magnetic inspection method above to be described is to be placed in the same category. It is based upon a comparison of an unknown with a known specimen, the performance of the latter having been determined under service conditions.

The outstanding advantage of the magnetic method of test lies, of course, in its nondestructiveness. But this is by no means its only advantage. In magnetic testing, the effects of what appear to be the internal stresses concomitant to structural changes are evaluated. Physical testing, by which is meant such mechanical testing as is commonly used today, involves deformation with consequent modification of internal stress. When we consider the part that such stresses ultimately must play in determining the performance of a material, particularly when such material has been subjected to a process of heat treatment, magnetic testing as a test procedure becomes of great promise of usefulness.

In the examination of material which in its finished form represents the summation of more than one characteristic or quality, or is the result of more than one thermal process, it is important to be able to effect at least a partial separation of the different factors, all of which combined produce a finished article. Let us consider a cutting tool. This tool has been subjected to a heat treatment, which embraced both a quench and a draw. A physical test, such as a hardness measurement, will give a single factor result and one which is not able to differentiate as between, for example, an overquench followed by an overdraw, and an underquench followed by an underdraw. It is, however, a characteristic of magnetic data that intermediate processes in thermal treatment leave a definite stamp on the material; that is, subsequent treatment does not entirely efface the effects of an earlier step.

Thermal Treatment Important

While chemical composition and initial grain structure influence the cutting performance of a given tool, the most important variable entering into its manufacture rests upon its final thermal treatment. It is the thermal treatment, more than any other process, that causes the wide variation found in tools of commercially similar composition. An error of omission or commission in the quench or draw, or both, means decreased uniformity of production. A test method which serves to identify even in part that particular step in a thermal process in which departure from routine procedure occurs, is of great value. Those who have considered deeply as to the possible reasons for the performance of what proves to be an exceptionally good tool, will appreciate this.

In describing a method of magnetic test procedure which effects a desired differentiation with respect to more than one variable the author desires to point out that this paper does not pretend to cover a completed research or to offer a full solution. Since, however, the results presented are obtained by a method believed to be entirely new and one which has found successful commercial application during the past two years, it is felt that publication at this time will stimulate others in the field of magnetic inspection and facilitate the gathering of additional magnetic data.

For the purpose of the discussion below, we shall consider that the chemical composition and initial grain structure of the specimen tested are fixed, and the factors which are our immediate concern are found in the quenching and drawing process. We shall not attempt at this time to explain the exact nature of the particular factors which influence the magnetic results. It is sufficient for the argument that they exist and that they serve to a degree to define the steps through which a tool has passed to its final condition.

To illustrate the general principle employed in differentiating between two or more quantities or properties, the following remarks may be made:

We learn in elementary algebra that two independent equations must be set up to represent the known effects of two variables. If one equation is a simple multiple of the other, the solution is indefinite; a combination of the two unknowns can be evaluated, but not the quantities themselves. Similiarly, the effects of two heat treatments can be separated only if two measurements can be made involving different combinations of the separate effects. As an instance, let us consider four specimens of high-speed steel, alike except as to heat treatment:

A is quenched from 1300 degrees Cent. and drawn to 550 degrees Cent.
B is quenched from 1300 degrees Cent. and drawn to 600 degrees Cent.
C is quenched from 1200 degrees Cent. and drawn to 550 degrees Cent.
D is quenched from 1200 degrees Cent and drawn to 600 degrees Cent.

If we plot a magnetic quantity, x, of each piece, against a magnetic quantity, y, of each piece, it will be seen at once whether these quantities are interdependent or not. Suppose for A, $x=0$, $y=6$; for B, $x=2$, $y=4$; for C, $x=1$; $y=5$ and for D, $x=3$, $y=3$. Plottng these, as in Fig. 1 (left), it will be found that all the points lie on a straight line; therefore the measurements are not independent. If the values for A are, $x=0$, $y=6$; for B, $x=2$, $y=4$; for C, $x=3$, $y=6$; and for D, $x=5$, $y=4$, it will be found as shown in Fig. 1 (right), that C and D are in a different category from A and B. If it were then shown that all specimens quenched from 1300 degrees Cent. and drawn to 550 and to 600 degrees cent. lie along the line AB, and that all quenched from 1200 degrees cent. and similarly drawn lie along the line CD, and that the value of y varies with the drawing temperature, the intermediate position of any point such as F may be expected to indicate the quenching and drawing temperature of a corresponding specimen. Inspection can thus be carried out in regard to the two variables under discussion, using the four known specimens to give the necessary points of reference.

This follows regardless of the actual shape of the plot, or whether the lines of equal quench and equal drawing temperature are straight or curved.

In Fig. 2 is shown diagrammatically the wiring diagram for one form of apparatus employed in the tests. T, a test solenoid is arranged to receive the specimen under examination. This

From a paper presented at the Atlantic City, N. J., meeting of the American Society for Testing Materials, June 25 to 29. The author is research engineer, American Chain Co., Bridgeport, Conn.

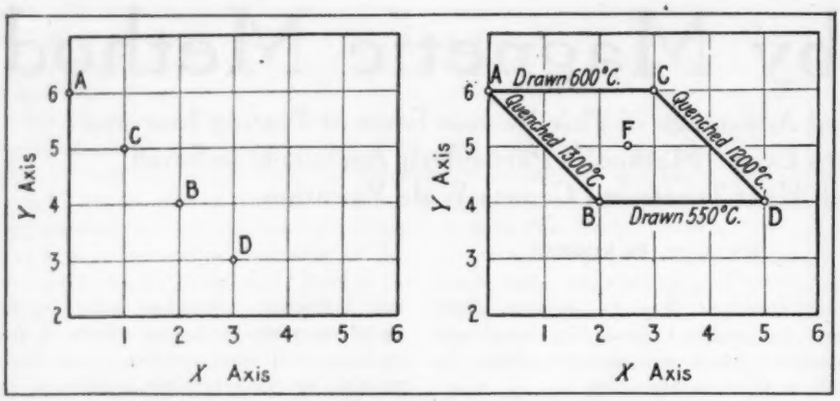


FIG. 1—ILLUSTRATION OF PLOTS OF MAGNETIC MEASUREMENT. (LEFT)—X AND Y MEASUREMENTS NOT INDEPENDENT. (RIGID)—X AND Y MEASUREMENTS INDEPENDENT

solenoid is energized from a source of variable electromotive force E, through the switch S, variable inductance I, variable resistance R and R_1 and switch S_1. As shown, switch S_1 is arranged to allow the successive use of two independent sliders L and L_1, both of which act with the resistance R_1. Ratio coils B and B_1 are shunted across solenoid T through switch S_1. Bridging the two parallel circuits formed by T and R_1 and B and B_1 is the moving coil M of a galvanometer G, which for the present we will consider as a pointer instrument. In series with M is a condenser C which may be shortcircuited by the key K, and bridged across the terminals of M are resistances r and r_1, so connected with respect to a switch as to permit the adjustment of the galvanometer sensitivity under two conditions. The field winding F of the galvanometer is wound upon a magnetic core H and is excited from the source E through the variable inductance I_1 and variable resistance R_2. A and A_1 are ammeters located in the test coil and galvanometer field circuits, respectively. As will be seen, the test solenoid forms one arm of a bridge circuit, the other three arms of which are B, B_1 and R_1. All switches are operated from the same handle, and make the proper connections for the X or the Y circuits, that is, the circuit with and without the condenser.

In the use of the apparatus shown in Fig. 2, a standard specimen of known heat treatment is inserted within the solenoid T and switch S_1 closed so as to connect with slider L. Key K is now closed so that condenser C is shortcircuited. Switch S is closed and the currents in the test solenoid and galvanometer field circuits adjusted to desired values by means of resistances R and R_2. The deflection of the galvanometer G, which is normally observed, may be brought to any desired value on the scale by combined manipulation of slider L and resistance R. The final value as adjusted may be defined for the present as the X reading. Switch S_1 is now closed so as to connect with slider L_1. Key K is opened so as to place C in series with M and the galvanometer deflection brought to its desired value by the combined manipulation of slider L_1 and resistance R_1. This second galvanometer deflection is designated as the Y reading. These two galvanometer deflections are indicative of different combinations of two different magnetic properties of the standard specimen and subsequent readings with test specimens are to be referred to these values as standard.

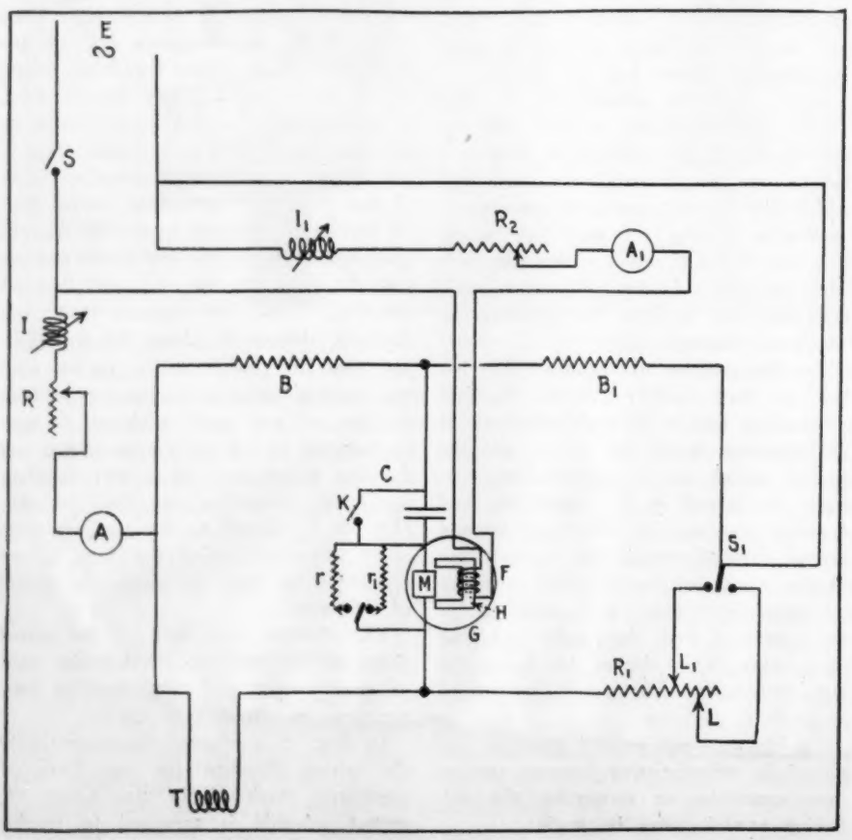


FIG. 2—DIAGRAM OF CONNECTIONS FOR TESTING APPARATUS

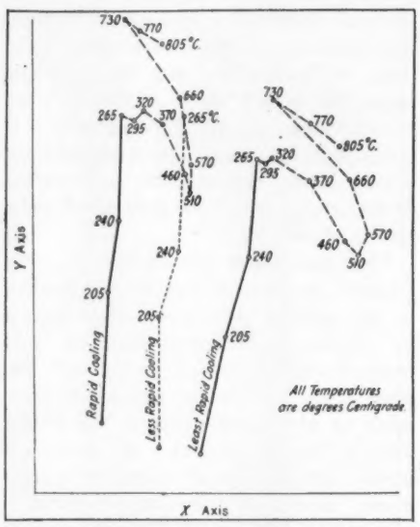


FIG. 3—METHOD OF OPERATION OF REFLECTING GALVANOMETER

The use of condenser C, as when placed in series with M or shortcircuited, operates to cause a variation in phase relation between the current in the moving coil circuit and that in the galvanometer exciting field. This variation in phase relation and the modification in wave form which accompanies it, allows a desired discrimination between two different magnetic properties, and hence structural properties, of the material in T.

While, as described, a single galvanometer may be used to obtain both the X and Y readings, two similar galvanometers, one of which is in series with a condenser, may be employed and thus the necessity of taking two successive readings is avoided. A method utilizing two galvanometers has been successful in the testing of continuous lengths of rods and wires. It may be remarked in this connection that variations in speed of feed do not affect the results. Indeed,

trial shows that the method may be used in connection with automatic forming machines where the feed is intermittent.

The use of a single reflecting galvanometer, which permits reading from a spot of light, offers many practical advantages and in Fig. 4 is shown an arrangement that has been found most useful. *D* is a light source which is deflected by the mirror *O* to the galvanometer mirror M_1 and thence, by means of the mirror *P*, to the co-ordinate paper *W*. *P* may be rotated by hand about its horizontal axis, by means of the knob *U*, so as to adjust the light spot along the *Y* axis of the co-ordinate paper. If then the *Y* circuit be closed, with the condenser in, that is to say, obtaining the *Y* reading, a deflection is observed indicating the condition of balance in the circuit under these conditions. The position of the spot of light may be at 1 on the plotting paper in Fig. 4. This measures a distance *y* which, however, being treated parallel to the *X* axis, is in the wrong direction for measuring the *Y* co-ordinate. By the simple device of moving by hand the mirror *P*, the spot of light is made to travel parallel to the *Y* axis from 1 to 2, the position at which it intersects the 45-degree line bisecting the angle formed by the *X*-*Y* axes. The distance from 2 to the *X* axis is now equaled to *y*, measured as is necessary along the *Y* axis. Without moving the mirror *P*, the *X* circuit is then connected, short-circuiting the condenser, and the resulting deflection which carries the spot of light to 3 is the *X* reading along its proper axis. The position of the spots of light may now be recorded by a pencil mark on the paper which constitutes the plot. The co-ordinates of this spot, *x* and *y*, are the measurements which it is desired to plot against each other, in their proper relation.

Application of the Method

In Fig. 3 are shown the changes in a 1 per cent carbon tool steel, plotted according to the method described, accompanying three different rates of cooling from 810 degrees cent., with similar successive drawing temperatures. The dimensions of the specimen are ½x⅜x4 inches. The drawing temperatures for the intermediate rate of cooling are not shown above 265 degrees Cent., but for the most rapid and least rapid rate the drawing temperatures are plotted in dotted lines up to 805 degrees Cent. The plot shown is intended for actual use only below the drawing temperature of 265 degrees Cent., at which point a new metallographic constituent of the steel begins to exert a predominating influence. If inspection is to be carried out above this point, a readjustment of the apparatus is necessary to prevent confusion between the different effects of rate of cooling and temperature of draw. The method is most applicable to steels in the same metallographic state, that is, martensitic, troostitic, sorbitic, or pearlitic, corresponding to the four branches of the curves as drawn for the highest and lowest cooling rates in Fig. 3. A hardness test will readily distinguish between the states.

Regarding the steel of most rapid quenching and drawn within the range 265 to 510 degrees Cent., it may be remarked that the use of the device shown in Fig. 3 permits us to co-ordinate any particular drawing stage so that, for example, a line drawn so as to join these points shall, in general, be parallel to the *Y* axis. It is possible further to manipulate the variable inductances *I* and I_1 and variable resistances *R* and R_2 of Fig. 2, so that specimens alike as to one variable, as quenching, shall have the same *X* reading regardless of the drawing temperature. The *Y* reading then indicates variation in the drawing temperature.

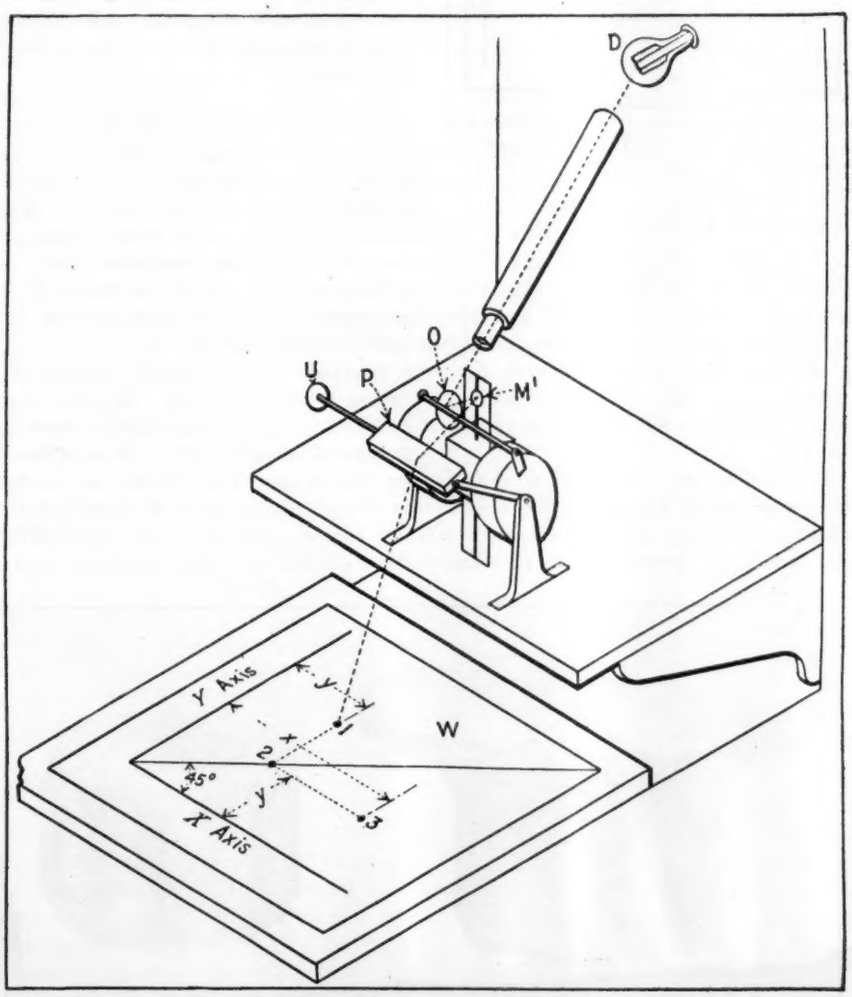


FIG. 4—PLOT OF MAGNETIC DATA FOR 1 PER CENT CARBON TOOL STEEL, QUENCHED FROM 10 DEGREES CENT. AT THREE RATES OF COOLING AND DRAWN TO TEMPERATURES INDICATED. SPECIMENS ½ X ¼ X 4 INCHES

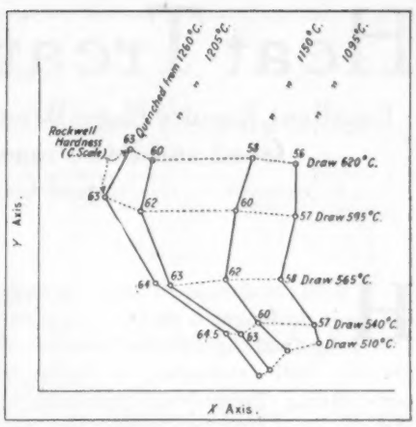


FIG. 5—PLOT OF MAGNETIC DATA FROM 18 PER CENT TUNGSTEN HIGH SPEED STEEL, SHOWING EFFECTS OF QUENCHING AND DRAWING. SPECIMENS ⅛ X ⅜ X 3 INCHES

Used for High Speed Steel

The plot shown in Fig. 5 illustrates *X* and *Y* readings for high speed steel bits, ⅜x⅜x3 inches, quenched from different temperatures and drawn as indicated. Figures of Rockwell hardness are also given. In this case, the specimens were quenched from the liquid bath used by A. E. Bellis. An attempt at the usual method of hardening led to discordant results. All drawing was done in air, and the specimens held for 30 minutes.

(*Concluded on Page* 540)

Heat Treating Improves Castings

Excellent Results Have Been Obtained with Chrome-Nickel Steels—Treatment Exaggerates Good and Bad Properties of the Material—More Research on Special Alloy Steel Castings Needed as Their Demand Increases

BY A. W. LORENZ

HEAT treatment of steel castings is no longer a matter of curiosity and speculation, but is a practice well established in many of our leading industries. Strange to say, it is a matter which has not been taken up seriously by foundrymen in general, possibly because they do not as a rule have either the equipment or personnel for such work. The development of heat treated castings has been confined almost entirely to those manufacturers who, by reason of their experience in the treatment of forge and tool steels, are in a position to handle castings as well. The ideal condition should exist, however, when the foundry is equipped to deliver fully treated castings, for while heat treatment alone produces a certain amount of improvement, the best results can be obtained only when foundry practice ties in with it.

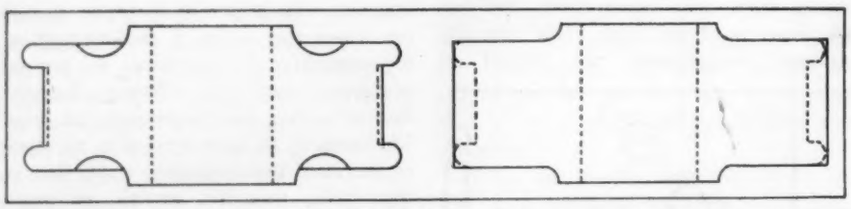


FIG. 1—ROLLER CASTING REDESIGNED TO PERMIT OF EASIER AND BETTER FOUNDRY PRACTICE. THE SKETCH AT THE RIGHT SHOWS THE PATTERN AS ALTERED

A simple explanation for this is that heat treatment exaggerates to a remarkable degree the virtues and failings of the steel itself. One investigator has expressed the opinion that the heat treatment of steel castings will bring on a new era in foundry practice, focusing attention on conditions heretofore considered of little moment, and calling for higher standard of quality. It is not the purpose of this article to go into details on such points, but we shall enumerate briefly some of the defects which are becoming apparent to the treater of castings.

Nonmetallic inclusions have been thoroughly discussed by various writers. Possibly, however, too much attention has been focused on the contained or selfgenerated impurities of the steel itself, such as manganese sulphide, alumina, etc., and not enough thought has been given to the inclusions picked up in the mold. Excess silica wash, drops and breaks due to poor ramming, or dirt carelessly left in the mold, are the most harmful elements imaginable in a piece of steel. Such impurities form a film between the crystals, and no amount of treatment can remove the outline of the original structure. Surface inspection of a casting may be a better criterion of quality than many a phyisical test.

Dendritic structure is sometimes so pronounced that the most careful treatment will not remove it. This structure is held to be due, as one investigator states it, to the temperature gradient between the center and surface of the mold. It therefore involves a study of pouring temperatures, mold temperatures, size of casting, and all other conditions affecting the rate of cooling.

Concerning the density of steel it is the usual thing for us to think of a casting as being either sound or porous; solid, or possessed of shrinkage cavities. These are conditions which we can see. However, it seems evident that the soundness of steel may run the gamut between apparent porosity down to a degree which may be indicated merely by a lack of density, and which can only be brought out by macroscopic or microscopic examination.

Practical Examples

For several years we have been heat treating 0.50 to 0.60 carbon rollers, as shown in Fig. 1, to obtain a surface hardness of 400 to 450 Brinell. When cast in the form shown at the left, about 2 per cent cracked in the flanges during or after quenching, due to sand inclusions. The pattern was altered to the form shown at the right to permit of easier and better foundry practice. Out of several thousand made to the new design, none has been lost in heat treatment.

Fig. 2, left, shows a nickel-chrome pinion weighing about 400 pounds. On account of the exacting nature of the service for which this pinion was intended, a sample was cut up after treatment. A slice was examined microscopically and indicated lack of density at the root of the teeth. This conclusion was confirmed by the results shown in Table I.

The part was redesigned, making the flange a separate unit. It was thus possible to get a more direct feed to the roots of the teeth. Heat treated pinions of the new design, as shown in Fig. 2, right, have been in service for several years, and are reported by the users to be giving excellent results.

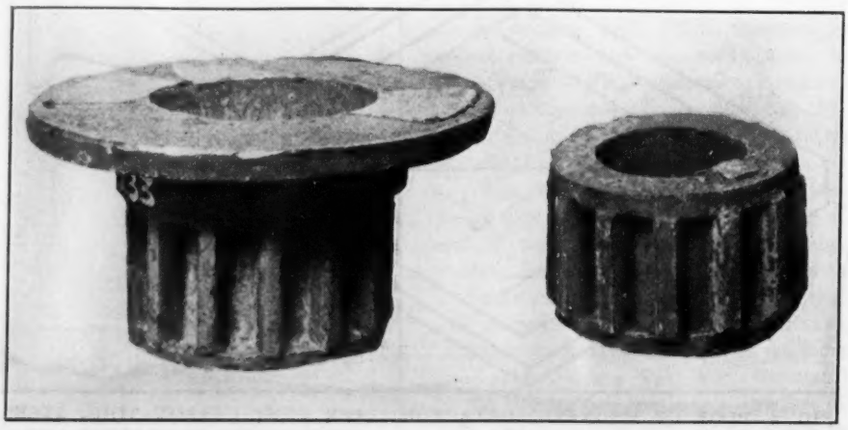


FIG. 2—PINION CASTING CHANGED IN DESIGN TO OBTAIN A DENSE METAL AT THE ROOT OF THE TEETH

From a paper presented at the Cleveland convention of the American Foundrymen's association, April 28-May 3. The author is connected with the Bucyrus Co., South Milwaukee, Wis.

The treatment of castings, as has often been stated, is in every way similar to the treatment of other types of steel. Literature on this subject is so easily obtainable, and the art is so well standardized, that a detailed discussion is hardly necessary. With proper furnaces and equipment, and careful heating, no trouble will be experienced from cracking and warping, unless on intricate pieces. While oil is probably the most satisfactory quenching medium for small work, water is more adaptable for large pieces. The water should be kept warm, at least 70 degrees Fahr. Several companies treating large quantities of castings quench in water at 125 to 150 degrees Fahr., and the results are satisfactory. The castings should not be left in until cold, but for a definite period, determined by the point when the piece no longer kicks.

On removal from the water, the piece should be immediately drawn. Cracking is likely to result on long standing. It has been rather definitely established that certain types of low carbon alloy steels give better impact values if quenched from the draw, instead of cooling in the furnace. In such a case, a final heating at a still lower temperature is advisable.

Develops Wearing Qualities

The steel about to be described is intended to develop wearing qualities as well as strength. It is a type frequently demanded by the Panama Canal commission under the following specification: Nickel 1.50 to 1.75 per cent, reduction of area 15.0 per cent. This steel, in the annealed condition, generally will average about 60,000 pounds per square inch yield point or higher, 100,000 pounds per square inch ultimate strength, 15 per cent elongation, and 20 per cent reduction in area. Occasional bars will show as high as 70,000 to 75,000 pounds per square inch yield point, 110,000 to 120,000 pounds per square inch ultimate strength, 20 to 30 per cent elongation, and 30 to 50 per cent reduction in area. When heat treated, test bars of a 0.35 per cent carbon nickel-chrome steel show the results in Table II.

As the carbon content increases, the added brittleness of the steel becomes quite noticeable, and the presence of even small amounts of impurities has a marked effect on the ductility. For this reason, results on different heats, or even on various bars from the same heat may not always be concordant. Tables III and IV show results on 0.40 and 0.45 per cent carbon nickel-chrome steel, respectively. The addition of about 0.4 per cent molybdenum to the above steel produces some interesting results. The general characteristics of such a steel, with 0.35 to 0.40 per cent carbon, are shown in Table V. This steel is extremely sensitive to changes in the rate of cooling, and is not satisfactory for quenching. The upper critical point occurs at about 1350 degrees Fahr., but greater hardness can be obtained by heating to higher temperatures.

Our experience in the manufacture of alloy castings has been confined almost entirely to chrome-nickel steel. Over a period of many years, we have found this type most adaptable for our class of work. Many other types, such as plain chrome, chrome-vanadium, and chrome-molybdenum, are now being employed in the manufacture of castings. The demand for these special steels is rapidly increasing, and it is well worth the founder's time to investigate the problems involved in their treatment.

Table I

Physical Properties of Nickel-Chrome Steel

	Yield point, pounds per square inch	Ultimate strength, pounds per square inch	Elongation, per cent	Reduction of area, per cent
Test bar	92,450	111,500	19.5	50.0
Flange	86,300	113,700	15.0	19.1
Root of teeth	79,750	104,800	8.5	8.5

Table II

Tests of 0.35 Carbon, Nickel-Chrome Steel

Carbon, per cent	Manganese, per cent	Nickel, per cent	Chromium, per cent	Phosphorus, per cent	Silicon, per cent	Sulphur, per cent
0.35	0.82	1.95	0.66	0.011	0.36	0.022

Treatment	Yield point, pounds square inch	Ultimate strength, pounds square inch	Elongation, per cent	Reduction of area, per cent	Brinell hardness	Izod
*WQ 1500, D 1200	113,300	130,000	14.5	29.5	269	31
Air cooled	75,000	104,750	21	48.3	..	..
Furnace cool from draw.	92,650	105,800	23.5	52.0	248	37
*WQ 1500, D1150 Furnace cool from draw.	91,700	105,750	23.0	52.0	248	..
*WQ 1500, D1150 Quench from draw	89,000	107,000	21.0	51.1	255	44
Quench from draw	89.500	107,050	23.5	53.9	255	..

*WQ, water quench; D, draw.

Table III

Tests of 0.40 Carbon, Nickel-Chrome Steel

Carbon, per cent	Manganese, per cent	Nickel, per cent	Chromium, per cent	Phosphorus, per cent	Silicon, per cent	Sulphur, per cent
0.40	0.84	1.72	0.63	0.11	0.42	0.032

Treatment	Yield point, pounds square inch	Ultimate strength, pounds square inch	Elongation, per cent	Reduction of area, per cent	Brinell hardness	Izod
Air cooled, D 1150	64,050	114,000	15	24	241	6
*WQ 1500, D 1200	113,300	130,000	14.5	29.5	269	31
WQ 1500, D 1200	79,300	109,300	16.0	37.9	..	..

*WQ, water quench; D, draw.

Table IV

Tests of 0.45 Carbon, Nickel-Chrome Steel

Carbon, per cent	Manganese, per cent	Nickel, per cent	Chromium, per cent	Phosphorus, per cent	Silicon, per cent	Sulphur, per cent
0.46	0.87	1.87	0.83	0.016	0.44	0.038

Treatment	Yield point, pounds square inch	Ultimate strength, pounds square inch	Elongation, per cent	Reduction of area, per cent	Brinell hardness	Izod
Air cooled, D 1200	68,500	109,450	19	27.8	241	6
*WQ 1500, D 1200	119,850	139,000	13.5	23.7	269	26
WQ 1500, D 1200	106,700	120,250	17.5	35.7	..	..

Table V

Effect of Adding 0.4 Per Cent Molybdenum

Treatment	Yield point, pounds square inch	Ultimate strength, pounds square inch	Elongation, per cent	Reduction of area, per cent	Brinell hardness	Izod
Air cooled	130,000	162,400	3.5	3.9	450	..
Furnace cooled	104,000	140,400	13.0	24.4	302	6
Air cooled, D 1250	90,000	119,450	17.0	25.1	262	27
Furnace cooled, D 1250	60,150	101,100	17.5	33.7	212	11

*WQ, water quench; D, draw.

The Eight-Hour Day in Europe

Iron and Steel Plants in Old World Adopted Short Day at End of War—No Tendency To Revert to 12-Hour Shifts—Difficulties with New System Are Not Easily Overcome

BY H. COLE ESTEP
European Manager, Iron Trade Review

EUROPEAN experience with the 8-hour day in iron and steel plants should be useful to the United States now that the industry in America, committed to the 3-shift system, wants to know how to make the change from the long turn with the least possible dislocation and expense and the greatest benefit to the men involved. This problem, with which iron and steel manufacturers in the United States are grappling, has confronted nearly every European producer in the past few years. The success with which it has been solved varies from country to country and plant to plant. In one or two European mills experience with the 8-hour day goes back nearly 50 years, but in most cases it is a postwar development.

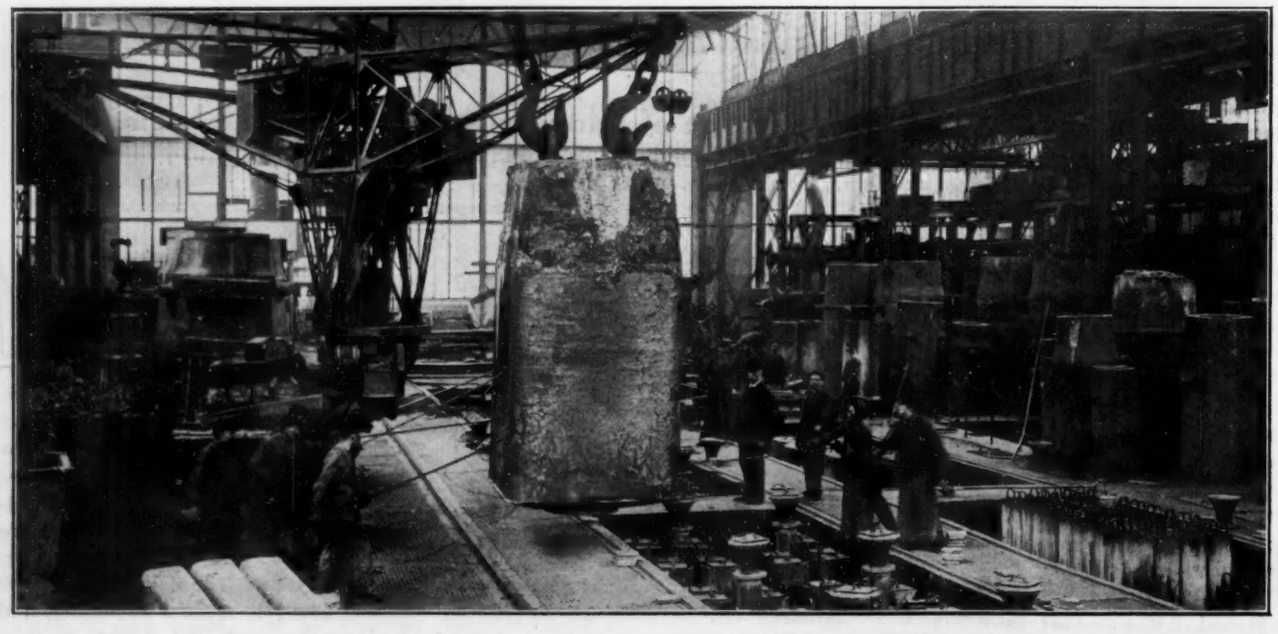
Generally speaking European iron and steel plants worked on the 12-hour basis until the armistice, soon after which there was an almost complete change to the 3-shift system, so that for the past four years practically all of the Old World's pig iron, coke, and finished steel has been made by men working an actual 8-hour day. Last year Europe produced 21,000,000 tons of pig iron and 25,000,000 tons of steel; consequently the experience of her manufacturers with the short day is considerable and contains suggestions of great practical value to American steelmakers at this time.

The American contention that there are serious practical and psychological difficulties to be overcome before the 8-hour day can successfully be applied to continuous and semicontinuous industries is amply confirmed by European experience. It also is significant that the problems met with in changing from the 12 to the 8-hour day were virtually identical in all European countries, but such differences as have been encountered carry a special message for American producers.

Some Prefer Longer Day

In Austria, Hungary, Roumania, Jugoslavia, Poland and other countries from which the United States draws most of its steel mill labor the reaction to the shorter day has been much less satisfactory than in England, France, and Germany, from which relatively few men are now recruited for American plants. The men in the latter countries, with their higher average of intelligence, appreciate the short day and endeavor to utilize their spare time to some advantage, but the workmen in central Europe seem to feel they owe their employers no recompense for improved conditions while at the same time their tendency is to use their increased freedom mainly for carousals. These facts would indicate that America is trying the 8-hour day with the least promising human material.

Other facts of interest to American producers are revealed by a general survey of European experience with the short day. The first is that by no means all the men concerned are themselves in favor of the limited working period. in Jugoslavia, Spain, and Belgium prominent employers report that after the institution of the 8-hour day, with no reductions in wages, many of their men sought supplementary employment for the sake of extra money, with the result that some of them are actually working longer hours than before the change took place. Last year fully 150,000 Belgians migrated permanently to France because the French laws on hours of labor permit a somewhat longer week than is allowed in Belgium. On the Franco-Belgian border near Lille thousands of Belgian workers cross into France every day where they are employed for 9 or 10 hours in French foundries, engineering plants, and mills



STEELWORKERS AT KRUPP PLANT ON 8-HOUR DAY BASIS

The 8-hour day in Germany was made compulsory by laws passed in November, 1918, and December, 1919, a decision of far-reaching importance, as shown by records of decrease in output and efficiency in the German industry in general

preferring this on account of increased earnings to the compulsory 8-hour day in Belgium. The average number who thus go to and from their work across the border now exceeds 40,000. The 8-hour day is not an unqualified success, even in Europe where the supply of men is ample and the tradition of leisure more deeply rooted than in America.

But from this it should not be assumed that there is any movement back to the 12-hour shift in European iron, steel, and engineering industries. The short day has come to stay, and although there are some workmen and some employers who would like to see a restoration of prewar conditions, their influence is too feeble to have any effect on the situation. The unions, which are much more powerful than in the United States, are resolutely opposed to any extension of working hours, even at heavy overtime rates, and there is a general opinion among all classes, including the employers, that the 8-hour day is worth while. Even after four years' experience it is not easy to point to definite advantages resulting from the abandonment of the long turn, but this does not weaken the fairly general conviction that the new system represents a social advance.

Reports which are occasionally circulated in America to the effect that this or that European country is giving up the 8-hour day for the sake of greater production, national welfare, or other reasons, are almost wholly false. It should be specially emphasized that there is no tendency in Germany to go back to the longer day. As the following discussion will show, Europe has by no means solved all the problems connected with the 3-shift system, but nevertheless for better or worse the 8-hour day is a fixture in European industrial life, covering both continuous and noncontinuous operations.

Labor Efficiency Decreases

In other words, European experience teaches the American employer that once the 8-hour day is established, even though it may not be wholly successful, there is little possibility of going back to the longer period.

The third general fact which emerges from a study of the 8-hour day abroad is that its effect on labor relations and the morale of the workmen is just the opposite of that claimed by social reformers and uplifters. This is particularly true in central Europe and is a feature of the situation in Belgium and Germany. According to an investigation made by the labor department of the League of Nations, an organization which is certainly not prejudiced in favor of the employers, only in Great Britain is there clear evidence that the introduction of the 3-shift system has resulted in employes showing increased interest in their work, coupled with improved timekeeping and greater energy. In England the men appear to be making good use of their leisure time. In Germany the ministry of labor reported that the interest and energy of the workers decreased following the adoption of the 8-hour day, and that except for the older men the employes use their increased spare time "to live on the streets and indulge in undesirable activities." Similar reports were obtained by the League of Nations' labor office from Belgium, Poland, Italy, Czecho-slovakia, Finland, Austria, and Serbia.

The strikingly good results noted in Great Britain are due to the fact that

Men Who Sacrificed to Get It, Appreciate Short Day

HOW much the short work day depends for its success on psychology and the good will of the men concerned is demonstrated by the contrasting experiences of European employers. It is only in those plants where the 8-hour day was adopted before the war that it has proved completely satisfactory. At that time the men considered it a great boon and were willing to make extra efforts for the sake of the shorter working period. Today the general feeling is one of resentment because greater privileges are not bestowed, and there is constant agitation for further alterations in time-honored working conditions. This change, which the war brought about in the mental attitude of European workmen, is strikingly illustrated in the following correspondence:

From a Middlesbrough, England, Blast Furnace Owner

"I have a clear recollection of the effect of the change over at the Cleveland blast furnaces from 12 to 8 hours a day in December, 1897.

"The new hours were adopted after a very long discussion with the representatives of the workmen, who were quite prepared to make considerable sacrifices both in rates of wages and the number of men engaged on particular jobs, for the purpose of obtaining the much desired change. The arrangement finally concluded was the result of mutual concessions.

"The effect of the change was not uniform at the different works, but I don't think that at any of the plants was the cost increased more than 10 per cent on the wages paid previously and at some furnaces it did not exceed 5 per cent. In the case in which I was interested we had five furnaces in blast and the wage bill was increased by 6½ per cent.

"I do not think it would be possible at the present time to effect a change over on anything like such reasonable terms. The attitude of workmen at present is to demand a reduction of hours as a right, whereas at the time I refer to it was regarded as a very desirable change which could only be obtained by making considerable sacrifices.

"But conditions were different before the war. After the 8-hour day had been in operation a short time at our plant no one would have been disposed to return again to the 12-hour shift. Work was more regular, results more satisfactory, and the change was a distinct gain to the employers."

From a Belgian Blast Furnace Owner

"The 8-hour day was adopted at Belgian blast furnaces in September, 1919, and at steelworks and rolling mills in February, 1920. At our blast furnaces, coke ovens, and steel plants our men show less energy and no increase in interest in their work as a result of the change. At present the majority of the workmen waste the extra hours which have been granted them. They neither educate themselves, nor engage in sport, nor take more sleep. A few of them try to add to their earnings outside the principal shop by working in other shops. Many of them indulge in gambling, and frequent the saloons and cinemas. Despite the shortened hours of work and the lengthened time of rest, the average production of the individual has decreased since the introduction of the 8-hour day.

"The increase in labor cost has been 65 per cent and the number of workers has increased by 50 per cent. Since, in general, wages have remained the same for the 8-hour as for the 12-hour day, the increased labor cost has been very heavy. The result has been a big increase in the total cost of production.

"A reversion to the 12-hour day would be desirable, but the ideas which are still being spread among the workers by the trade unions will prevent any headway being made in that direction."

British workmen made sacrifices to secure the 8-hour day, these sacrifices being considerable in those cases where the change took place before the war. The men are more contented with the 8-hour system in England than on the continent, because in the former country it has cost them something. In Belgium, Luxemburg, France, Germany, and central Europe the 3-shift system was, generally speaking, a free gift to the workers by the employers at the end of the war, and in most cases exactly the same earnings were guaranteed for eight hours as had formerly been paid for 12. The result is that the new system has accomplished practically nothing toward allaying labor unrest, increasing the men's efficiency, and bringing about more satisfactory conditions.

European experience would seem to indicate conclusively that unless the men who obtain the benefit of the shorter day pay something to get it, the concession will be unappreciated and have no beneficial effect on labor relations. Nor will it accomplish much toward allaying the undesirable activities of labor unions. Unless the 8-hour day is granted under proper conditions, it will be found that the appetite of the men for concessions grows with what it feeds on. The 8-hour day is not a panacea for labor troubles.

The assertion at the May meeting of the American Iron and Steel institute's committee on the 12-hour day that it is questionable "whether the 12-hour men devote less time to their families than employes working less hours" would appear to be corroborated by Europe's four years trial of the 3-shift system. The reports which the international labor office obtained from central Europe, in its comprehensive investigation of the application of the 3-shift system to the iron and steel industry, are particularly conclusive in demonstrating that the results of the short day, in its effect on the men, in most cases have been just the opposite of what was claimed by social uplifters prior to its actual trial.

Eight-Hour Day To Stay

Although its trial in Europe would indicate there are few definite advantages which can be ascribed to the 3-shift system, it has met with sufficient success to justify its continuance. In some English plants where conditions are favorable, the 8-hour day appears to have brought definite advantages. Companies whose experience with the 3-shift system goes back to before the war can point to more tangible benefits from the change than those that adopted the short day after the armistice. This is vividly illustrated in the communications from typical British and Belgian ironmakers presented in the accompanying box.

Table I

How 8-Hour Day Cut Output

Percentage Decrease in Output Per Man Per Day on Substitution of 3-Shift for 2-Shift System (1)

Country	Blast furnace	Open-hearth furnace	Bessemer converter	Rolling mills
Belgium				
firm A	..	33	33	33
firm B	21	33(2)	35	42(3)
firm C	33	..	33	33
Finland		no change(2)		
firm A	..		..	..
firm B	5	6.5	..	22
firm C	..	44	..	5
Germany				
a firm	58(4)	58(4)	58(4)	..
workers	54(5)	7.5(5)	..	22(5)
Great Britain				
7 small furnaces	10(6)	..	..	..
2 furnaces	14(6)	..	..	..
Japan				
firm A	17	18	6	13 27(7) 40(8)
Jugoslavia				
firm A	..	..	..	24
South Africa				
a firm	..	22	..	20(9)
Spain				
firm B	33	33	..	50
firm D	..	33	..	37
firm E	..	33	..	28(10)
firm F	33	..	..	..

(1) In some cases the percentages were not given in the replies, but it has been possible to calculate them from the data.
(2) Open-hearth furnaces.
(3) It is assumed that "daily output of workers" means output per man per day.
(4) Figures relate to June, 1919, six months after change of system.
(5) The percentages of decrease are obtained by comparing the average output per man per day in September and October, 1918, with the average output per man per day in May, July and August, 1919.
(6) Figures taken from Report No. 5 of Industrial Fatigue Research board.
(7) Small bar mills; increase.
(8) Rail mills.
(9) Wire mills.
(10) Effect of good discipline and bonus; exceptional cases.

In some plants in England before the war, according to the reports of the Industrial Fatigue Research board, men working 12-hour shifts on blast furnaces lost 12.8 per cent of their time through absences on account of sickness and other causes, whereas under the 8-hour day this was reduced to 9.2 per cent. Similar results in various parts of the country led the Industrial Fatigue board to say that "it seems probable that a reduction of the 12-hour shifts to eight hours will lead to an improvement in timekeeping and thereby increase the efficiency with which the blast furnaces are run."

Reports to the Industrial Fatigue board from 10 British open-hearth plants covering three years, 1910-12, under the 12-hour system and three more years, 1913-15, under 8-hour shifts show that the tonnage produced per 24 hours increased with the shorter shifts from 3 to 13 per cent, the average increase for the 10 plants being 7 per cent. The total hours worked each week were exactly the same under the two systems of shift, so the improvement of output must have resulted from quicker handling of the furnaces and from the producer men providing a better supply of gas. It should be noted that the furnace crews were paid on the usual tonnage basis and that the piece rates per ton were not advanced when the shorter hours were adopted. Hence there was a strong inducement for the men to increase their production with the shorter day.

Production Costs Increase

European experience seems to show that the 8-hour day is a social reform with benefits which it is difficult to evaluate definitely. For the sake of this social reform from 10 to 50 per cent has been added to the cost of making pig iron and steel in nearly all the foreign plants where the 3-shift system has been applied. This is because labor costs under the 8-hour day have usually increased 50 per cent and in most European countries there has been no reduction either in earnings or in the number of men per shift, and little or no increase in the output per man per day. The decrease in output per man per day upon substitution of the 3-shift for the 2-shift system in certain foreign plants, according to reports to the international labor office at Geneva, are given in Table I. The percentage increase of staff required in order to avoid loss of production when adopting the 8-hour day, according to actual experience in foreign countries, is given in Table II. The increase in the number of men required for the change to the shorter shift has generally been from 30 to 50 per cent. The British, Finnish, and Japanese plants have been able to manage with the smallest increases in staff, and this probably accounts for the better output per man per day also obtained in these countries. But in spite of these isolated results, the only general conclusion which can be drawn from Table II is that the introduction of the 8-hour day usually requires an increase of 50 per cent in the number of workers in blast furnaces, steel plants, and rolling mills.

In nearly every European country where it has been adopted, the 8-hour day has caused a re-introduction of the 7-day week. In Great Britain and throughout the Continent the men almost invariably work seven 8-hour shifts per week at blast furnaces and open-hearth and bessemer plants. The 56-hour week is the common thing. In rolling mills and finishing departments, however, it is customary to work only six shifts per week, reducing the weekly turn to 48 hours, and in various cases to 47 hours.

The first European mills to adopt the

8-hour day were the South Wales tin plate plants. This was in 1874. In 1890 the blast furnaces in Cumberland, England, went over to the 3-shift system, followed by the furnaces in the Middlesbrough district in 1897, and in Lincolnshire in 1913. At Dorman Long & Co.'s. Clarence works, the melting departments and certain sheet mills changed from the 12 to the 8-hour day in 1905, a similar change being made at the South Durham company's West Hartlepool plant in the same year. Most of the other plants in Great Britain clung to the 12-hour day until February 1919, when the 8-hour day became general throughout the country, the hours of coal miners being at the same time reduced from eight to seven. These changes were not the result of legislation but of labor union agitation, which having secured its original objectives, including a 47-hour week for molders, machinists, boilermakers, etc., is now demanding further concessions in the shape of annual vacations with full pay.

Nearly all the iron and steel plants on the Continent worked on the 2-shift system until after the war. In 1919 the change was made to the shorter day in Austria, Germany, Belgium, Luxemburg, Czecho-slovakia, Finland, Poland, Roumania, Jugoslavia, and Italy. This was largely the result of trade union agitation, backed up by 8-hour legislation in Austria, Germany, Czechia, Finland, Belgium, Poland, and Jugoslavia. The success of the movement was so complete in so many different countries that the leaders of the international labor conference which was held in Washington in 1920 thought the time ripe to put over an international agreement to limit the hours of work in industrial undertakings to eight per day and 48 per week. The agreement was duly drawn up in the form of a treaty, but out of the 55 countries belonging to the international labor office, which is a part of the League of Nations, only five have so far ratified the convention, namely Greece, Roumania, Czecho-slovakia, Bulgaria, and India. It is interesting to note that among these few countries are those from which the United States draws the bulk of its iron and steel plant labor. It is in these European countries, rather than those which are more important and more advanced industrially, that radical labor ideas are most prevalent.

The Situation in Austria

As illustrating the radically different testimony emanating from pro-labor sources and employers on these questions, we find an Austrian factory inspector—a union man—reporting as follows:

"The longer periods of rest have had an entirely favorable effect on the workmen. Many of the men are devoting their free time to growing vegetables in their gardens. Longer periods spent in the open air instead of in the frequently smoky works have also exercised a favorable influence on the health of the workers. The men have tried to increase their output by closer application."

Dealing with this same subject the Employers' federation writes as follows:

"The interest and energy of the workers have decreased. The longer periods of rest have had an unfavorable influence, insofar as the majority of the men devote their leisure to other occupations or to amusements which tire them out and make them disinclined for their chief occupation. The cost of producing pig iron and steel has been increased several times over. An exact estimate cannot be given as the costs are now affected not only by increased labor charges, but also by the reduction in output, the disinclination of the men to work, and increases in the number of disputes under the 8-hour system."

In Czecho-slovakia sentiment in favor of the short day is stronger than in many other parts of central Europe. Some tendency to operate more efficiently and to save in the use of material and tools is reported, but there has been little gain through increased effort on the part of the men. The men receive the same pay as when they worked 12 hours a day.

One of the leading iron and steel workers' unions in central Europe has issued the following remarkable statement: "Labor cost and also the total cost of production have fallen as a result of the introduction of the 3-shift system. It has been possible to make better and fuller use of the plants as a whole, with the result that higher profits are earned, and the whole industry is operated to better advantage."

This statement is overwhelmingly contradicted by other and more reliable testimony already cited.

Conditions in Germany under the 8-hour day are about the same as in other parts of Europe. The 8-hour day and the 56-hour week for continuous operations were made compulsory by laws passed Nov. 23, 1918 and Dec. 17, 1919. One of the first things the new government did after the Kaiser was overthrown was to establish the short work

Table III

How Output Dropped in Germany

Wages and Per Capita Production of a Large German Steel Works, 1913 to 1921

Year	No. of workmen	Amount marks	Index number	Labor cost per metric ton of steel marks	Production of steel per worker per shift, metric ton
1913	7,377	0.52	100	14.03	0.372
1914	6,618	0.52	100	12.90	0.403
1915	5,101	0.55	106	13.86	0.394
1916	6,075	0.62	119	15.36	0.400
1917	6,776	0.81	156	22.79	0.353
1918	6,977	0.99	191	30.19	0.329
1919	7,983	2.42	466	96.17	0.117
1920	8,543	5.92	1,138	217.81	0.217
1921	8,345	7.09	1,363	232.83	0.243

TABLE II

More Men Needed for Short Day

Percentage Increase of Staff Required in Order to Maintain Production at Same Level on Substitution of 3-shift for 2-shift System, Shift Workers Only

Country and organization replying	Blast furnace	Open-hearth furnace	Bessemer converter	Rolling mills
Austria				
government	50	50	..	50
employers	50	50	50	50
Belgium				
government	50	50	50	50
firm A	50	50	50	50
firm B	46	22(1)	24(2)	29
Canada				
government	..	33(3)	..	50(4)
Finland				
firm A	..	30(1)	..	30
firm B	5	6.5	..	50
firm C	..	43	..	50
Germany				
government	50	50	50	50
workers	50	50	..	..
Great Britain				
workers	40	50	50	50
6 small furnaces	13(5)	..	..	..
one furnace	17(5)	..	..	..
Italy				
government (3)	..	..	..	..

Country and organization replying	Blast furnace	Open-hearth furnace	Bessemer converter	Rolling mills
Japan				
firm A	..	28	11	18
Poland				
4 firms(6)	40-48	49-50(4)	..	40-45
Jugoslavia				
firm A	..	50	..	50
South Africa				
a firm	..	50(8)	..	..
Spain				
firm A	32	32	..	25
firm B	50	50	..	50
firm D	..	50	..	..
firm E	..	25	..	..
firm F	50	..	..	..
Spain				
firm G	..	..	..	50
firm H	50	..	..	50
firm J	..	60	..	50
firm K	..	..	..	50
firm L	30	30	..	50
Sweden				
employers	40-50	40-50	..	..
Switzerland				
firm A	..	..	..	30

(1) Acid furnace. (2) Basic-bessemer converter. (3) Electric furnace. (4) Sheet mills. (5) 20 to 50 per cent, chiefly because of stipulation made in the agreements in some districts that the third shift should consist of new hands added to the force. (6) Percentages refer to five furnaces and one mill owned by four firms. (7) Report No. 5 of Industrial Fatigue Research board. (8) White and black labor each increased 50 per cent.

day. It was a subject of far more importance to Germany at that time than the peace settlement. On account of the generally socialist leanings of the present government, and the strength of the labor unions, there is little likelihood of any general movement toward longer hours. The effect of the short day on steel production and costs in a typical German plant is given in Table III. Before the war the output per man per shift in this plant was 0.372 to 0.403 tons; since the 8-hour day it has been 0.117 to 0.243 tons. Nor does the stolid German worker appear to have responded in a much more favorable manner to the opportunities afforded by the short day than his confreres to the east and south. The ministry of labor says:

"It is unanimously reported from all quarters that the interest and energy of the workers has decreased. In many cases factory inspectors report a change for the worse in the quality and uniformity of the product. There is less economy in the use of material and the life of equipment is shorter under the 8-hour day. Accidents have considerably decreased. On acount of the fall in the mark it is impossible to tell what effect the new system has had on cost of production. The question of going back to the 12-hour day has been raised by the employers but the proposal is rejected by the workers represented by their trade unions."

Almost identical conditions appear to exist in Belgium, Luxemburg and eastern France. One Belgian blast furnace reports that it made the change to three shifts with an increase in direct labor cost of only 5 per cent per ton of output. A number of employers in Belgium, France, and Luxemburg complain that the 8-hour day gives the men unnecessary opportunities for labor agitation. It seems generally agreed that the position of the unions is strengthened by the short day. This is partly due to the fact that the men think it is the unions which secured them the 8-hour day with no reduction in wages.

In spite of its comparative success in the United Kingdom, in a general way European experience with the 8-hour day for the past three or four years shows that employers in the United States can expect little from the change now being made in the American iron and steel industry except certain intangible social benefits, and the satisfaction of knowing that everything possible is being done to contribute to the welfare of the country and its people.

Review of 30 years history of the General Electric Co. from its foundation in 1892 to 1922, has been made the subject of a 34-page booklet which the company has distributed to its stockholders. The booklet traces the electrical industry which grew out of the early pioneering work of the Edison General Electric Co., and the Thomson-Houston Electric Co., the astonishing growth of the business, the rapid increase in the size of generating units, steam turbines and the widening application of electric power. Twenty-three illustrations of electrical progress and progress in industrial relations add further interest to the text.

Inspecting Steel by the Magnetic Method

(*Concluded from Page* 533)

The time element in drawing appears to be exceptionally important, especially below 595 degrees Cent. In this case, the plot is prepared for the region between 565 and 620 degrees Cent., drawing temperature. By a proper adjustment the area from 510 to 565 degrees Cent., could have been made to approximate rectangular co-ordinates.

A different use of the apparatus is illustrated by its application to cold rolled strip steel. In this case the chief variables are the thickness of the stock and the degree of cold rolling, or the percentage reduction since the last anneal. This is not designated accurately as full hard (corresponding to the maximum cold work which it is practical to give the steel without injuring it), three-quarter, half and quarter hard, and dead soft, or annealed. The tensile strength, and hardness, as measured by the Rockwell method of scleroscope, increase with cold working and the elongation decreases. The Rockwell measurement is found to indicate quite closely the tensile strength.

In data from cold rolled strip steel the Y axis is used for the thickness variation, and the adjustable mirror is set by hand so that the spot of light lies on a line parallel to the X axis, corresponding with the thickness of the stock. A single magnetic reading is adjusted by means of the variable inductances and the use of a suitable test coil so that the magnetic effect of changes in cold rolling is a maximum. In other words, the adjustment of the phase relation of galvanometer field to moving coil is such as to give the greatest differences between specimens varying in cold work. In the case illustrated, the thickness then had a relatively small effect between 0.030 and 0.050 inches. Below 0.030 inches there is a loss in sensitivity. This can easily be readjusted if desired. The magnetic reading along the X axis is shown for the different degrees of rolling and the corresponding Rockwell hardness numbers are given. While the correspondence is not exact on account of the small number of specimens represented, it indicates a close relationship. The 0.020 inch strip is interesting in that the "¾ hard" on both Rockwell and magnetic is "harder" than the full hard. In the tension test, ¾ hard gave 104,700 pounds per square inch tensile strength and full hard 96,200 pounds per square inch. Here the magnetic and physical properties agree in showing that the amount of cold work does not always give a correct idea of the corresponding physical properties.

A similar situation is encountered in testing small case hardened chain as used for automobile skid chain. Here the factors to be measured and guarded against are brittleness at one end of the scale and softness at the other. It is immaterial from the point of view of acceptability whether the chain is soft because of insufficient depth of case or improper quench. Both will read soft. At the hard end, a coarse structure with a moderate case reads higher than a similar case of normal structure. Hence, the factors which make for brittleness read in the same direction and make a single measurement sufficient. If all other factors are constant, the magnetic reading is proportional to the depth of case. In this machine the sensitivity is adjusted and the zero shifted by changes in the circuit to give the same acceptance limits for all the different sizes. The use of the inspection method has enabled the manufacture of a much more uniformly acceptable product with practically no change in the production equipment.

The following conclusions may be made:

A rapid test can be carried out with portable apparatus and commercial alternating current, which can be used for commercial inspection of suitable objects. A separation can be made between the effects of different variables which enter into the quality of the finished product. A single measurement can, under favorable circumstances, be adjusted to read the desired combination of several factors influencing a complex property such as strength, hardness or brittleness. A simple and sensitive method of test is brought to the attention of those interested in studying the metallography and physical properties of steel.

The bureau of mines, department of the interior, is now loaning from its experiment station at Pittsburgh its newest industrial film, "The Story of Fire Clay Refractories." The film, which was prepared in co-operation with the Laclede-Christy Clay Products Co., depicts the mining of the raw clay, the various processes of mixing, molding and pressing, laboratory methods for examination, fusion tests, the actual burning of the clay in the kilns and also scenes showing the application of refractories in forge, malleable and electric furnaces.

Steel Plays New Role in Highway Construction

(*Concluded from Page* 530)

concrete curbs against abrasion and shocks and at the same time to serve as a reinforcement and a means of preventing cracks. The anchorage of the bar has a series of large holes, the steel extending into the slag a good distance. The open spaces in the anchorage allow the concrete to flow around it and prevent the separation of the concrete at the corners. The rigidity of these bars makes them easy to install.

While on the subject of road materials, it should be remembered that slag, a by-product of the blast furnace, is used extensively as an aggregate for concrete. It is estimated that more than 15,000,000 cubic yards of slag concrete and reinforced concrete is in use in the United States. Slag also is being employed in many industrial sections in place of crushed stone for macadam roads. Coal tar products are widely used for the surfacing of certain types of highways, these materials being reclaimed from by-product coke oven plants.

Motorists Believe in Signs

Still another phase of modern road building affecting the metal working industries is the increasing use of the metal highway signs. Not many years ago, before the automobile came into general use, it was not unusual to find important crossroads without signs for the guidance of the public. With the coming of the automobile and with the growing practice of drivers to seek out new roads, it has been almost necessary to plainly label each road intersection. In recent years, in the attempt of various state highway commissions and automobile clubs to standardize these road signs, the old type of wooden sign has given way to neatly stamped metal signs. In many cases standard warning signs such as are used to warn motorists of the presence of railroad crossings, steep hills, sharp curves, etc., are stamped in large presses and enameled with standard colors.

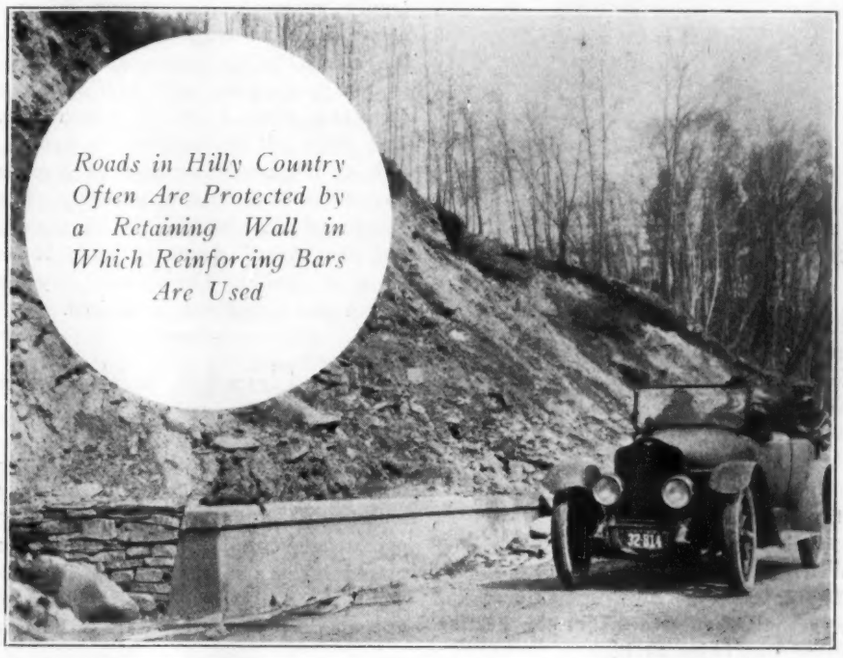
An idea of the number of metal signs required for modern automobile traffic can be gained from an article in the January, 1923, issue of the *Ohio Motorist*, which shows that the Cleveland automobile club alone has placed 6476 signs in northern Ohio and western Pennsylvania. These signs serve about 3200 miles of highway, making an average of about two per mile. Considering the fact other signs are placed in the same territory by city, county and state authority and balancing the more extensive use of signs in densely settled sections in southern New England and eastern New York and Pennsylvania against the less extensive use of signs in the West, it would seem that an average of two signs per mile may be a fair estimate for the entire country. On this basis there are approximately 5,600,000 signs on the streets and highways of the United States. By far the greater part of these doubtless are of metal.

Other Uses of Steel

There is a tendency to use pipe, steel angles, metal lumber, etc., instead of wood for sign posts. Heavy pipe also is appearing here and there for use along the highways as guard rails.

Although license plates cannot be considered as part of highway construction, it is interesting to note that the 12,000,000 pairs used annually involve the stamping and cutting of about 6000 tons of sheets.

From the foregoing study it is apparent that even under present conditions the business of road building requires a fair volume of material and products from the metal working industries. The extent of future needs is largely dependent on the economic conditions prevailing throughout the country, but in spite of anything that may happen to the automobile industry, the task of road building must continue until the highway system is more nearly on a level with traffic requirements. Therefore, although as is predicted, the supply of motor cars may reach the saturation point when 15,000,000 are driven by members of the 25,000,000 families in the nation, the construction of good roads will not stop until these millions of motorists have pavements adequate in mileage and quality for their pleasure and commercial traffic.



Roads in Hilly Country Often Are Protected by a Retaining Wall in Which Reinforcing Bars Are Used

Study Uses of Oxygen in Metallurgical Work

A report on the study of the feasibility of using oxygen or oxygenated air in metallurgical operations has just been published by the United States bureau of mines. The report contains data on investigations on the use of oxygen for smelting iron and ferromanganese in blast furnaces, for steelmaking by the bessemer and open-hearth processes, and for the production of artificial gas.

According to the conclusions given in the report, it is expected that application of oxygen to the present blast furnace will decrease production costs, increase the output per furnace, increase the flexibility of the process, increase uniformity of output, change the limiting factor of the process from the inaccessible hearth and bosh section to the shaft section and make possible the use of cheaper materials.

Higher temperatures and closer heat regulation may be obtained by the use of oxygen in the bessemer process, according to the report. The investigations show that the application of oxygen to the open-hearth process would be impracticable until the heat resistance of present refractories is considerably increased. If the necessary increase can be obtained, a saving will be effected by the substitution of cheaper fuel for that in use today. The

SMALL SANDER WHICH IS USED IN INTERNAL OR IRREGULAR WORK

substitution of oxygen for air in the last part of the open-hearth process will make it possible to secure steel of electric furnace quality and will decrease the required time by about three hours.

In the manufacture of artificial gas it was found that gas made with oxygen has greater calorific value than water gas and costs less to produce. The cost compared with producer gas was somewhat greater but the heating value was twice as high.

The report states the savings effected in the smelting of ferromanganese by the blast furnace process should be the same as those secured in the smelting of iron by the same process, with an additional large saving of fuel due to the fact that at the high temperatures in the hearth and bosh section obtainable by the use of oxygen, the manganese oxide would be reduced more readily. The shaft would have to be cooled by charging water in the top of the furnace to keep the top temperature at a safe value. This would result in a decrease in volatilization of the manganese.

Portions of the report will be published in greater detail in forthcoming issues of IRON TRADE REVIEW.

A plan has been adopted by the Jones & Laughlin Steel Corp., Pittsburgh, to sell to employes under special terms its 7 per cent cumulative preferred stock at $107.50 per share. Allotment of stock for this purpose involves 5000 shares.

Spindle Sander Has an Oscillating Motion

To meet the needs of the pattern shop or wood working factory where the amount of internal or irregular work to be done does not justify the buying of a larger machine, the Porter-Cable Machine Co., Syracuse, N. Y. recently has placed an oscillating spindle sander on the market. A view of the new machine is shown in the accompanying illustration.

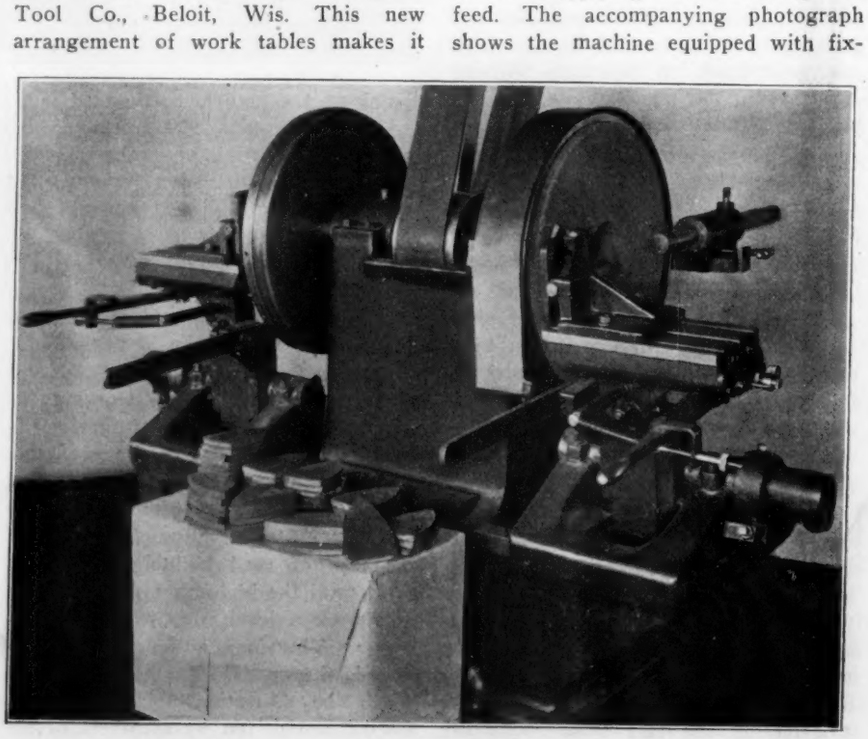
This machine is equipped with an electric motor which has a speed of 1725 revolutions per minute and is totally enclosed. The motor is connected direct through the spindle which has an oscillating movement of 1-inch, is equipped with ball bearings and furnished with a 2½ x 6-inch roll. The table of the machine is ground, tilts 45 degrees down and 15 degrees up and is 16 inches in diameter. The weight of the machine is 75 pounds and the overall dimensions are 16 x 16 x 25 inches. The device may be placed on a pedestal if desired.

Builds Grinder with Two Lever Tables

A new ring wheel grinder carrying two 24-inch wide faced abrasive wheels and equipped with two power operated lever tables recently has been placed on the market by the Badger Tool Co., Beloit, Wis. This new arrangement of work tables makes it possible for one man to operate both ends of the machine, making use of the time while one piece is being ground to load the fixture at the opposite end of the machine. In this way the full output from two grinding members is secured by one operator.

Means for wheel dressing is provided by mounting dressers on the rear side of the machine where they will not interfere with the grinding operation and are ready for use at all times. Provision is made to align dresser slides in the position to the machine spindle. Power for rocking the working tables in transmitted by belt from the machine countershaft to a reduction gear box on the rear of the machine. The rocking motion is imparted to the work tables by two straight levers, which are shown in the accompanying illustration. The work is held against the grinding wheel by an adjustable spring tension through the hand lever on the work table.

When grinding the machine operator disconnects the rocking table lever and draws the work table slightly back from the face of the grinding wheel, at the same time rocking the table forward until it is clear of the grinding wheel. The piece to be ground is laid on the fixture and the operator swings the table back into the grinding position. The table rocking lever engages and rocks the work slowly back and forth across the face of the grinding wheel, the adjustable spring tension supplying the necessary infeed. The accompanying photograph shows the machine equipped with fix-



RING WHEEL GRINDER HAVING TWO WIDE FACED ABRASIVE WHEELS

tures for grinding the tops and bottom of electric iron sole plates.

Device Aids in Keeping Nuts Tight

The Waynesboro Nut Lock Co., Waynesboro, Pa. recently has placed on the market a nut lock which embodies a new principle and is effective in operation. The lock operates on the principle of an alligator wrench. It is claimed that it can be tightened but cannot be backed off. Upon tightening the nut the tooth, which is shown in the accompanying illustration, engages the wrench thereby preventing the nut from moving backwards. And on account of the tooth having a rake, or being located at an angle to the center, any force tending to back off the lock causes it to tighten. However, when power is applied in the direction of the tightening of the nut the tooth recedes and permits the tightening to be accomplished, after which the lock functions as before.

Designs New Type Cooler for Municipal Supply

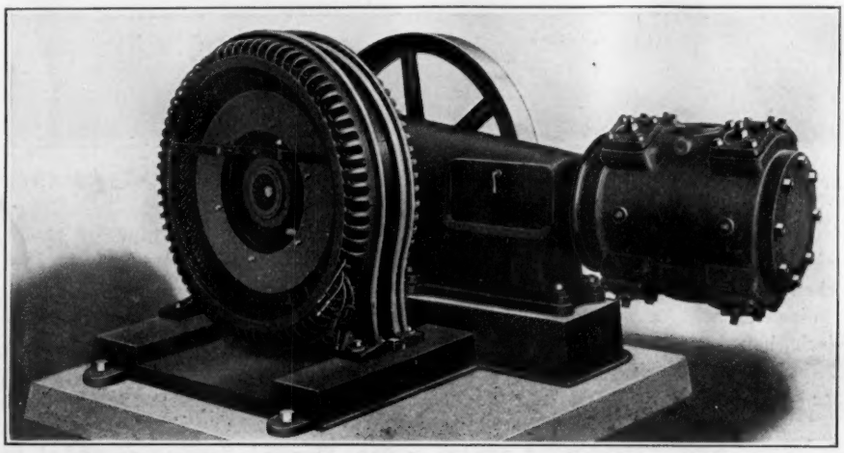
A new water cooler has been developed by the Century Brass Works, of Belleville, Ill., which may be attached to a municipal water supply to supply cold water. It consists of a cylindrical tank with a cork lining in the upper part of which ice is placed. The melted ice percolates through the perforated section which divides the cylinder and is circulated over a copper coil directly connected with the water supply and leading to the bubbler. The copper coil is made of tube copper plated with tin on both sides to lessen oxidation. The water from the bubbler, as well as the water from the ice, when drained, is conducted directly to the sewer. The ice water does not come in contact with the water cooled, and the coils are sufficient in number to insure thorough cooling. The bubbler has a self-closing, stop cock designed to eliminate useless waste of water. It is particularly adapted to use in factories, shops, offices and buildings. The estimated consumption of ice as stated by the manufacturers is less than one pound per capita a day.

Synchronous Motor Drives Air Compressor

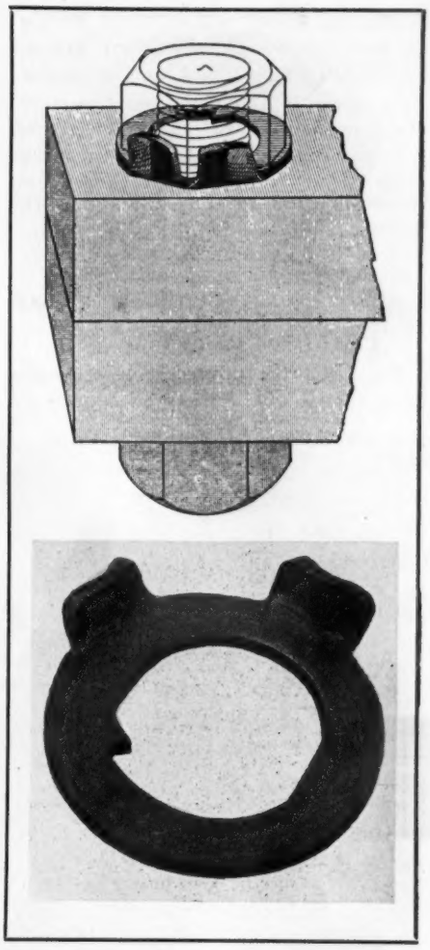
Efficiency and compactness are outstanding features claimed for an air compressor unit recently developed by the Pennsylvania Pump & Compressor Co., Easton, Pa., and shown in the accompanying illustration. The compressors are built in single and two-stage in several sizes up to and including a machine with a piston dispiacement of 600 cubic feet of air per minute. The unit shown in the illustration, with a cylinder diameter of 10 inches and a stroke of 9 inches has a piston displacement of 240 cubic feet of free air per minute. It is direct connected to a 40-horsepower synchronous motor running at a speed of 300 revolutions per minute.

The motor which replaces the usual belt wheel is mounted on one end of the crank shaft and the fly wheel is mounted on the other end. No outboard bearing is required since the crank shaft is supported on the two main bearings of the compressor.

The motor is controlled by a special switchboard which overcomes difficulties sometimes experienced in starting synchronous motors. The motor is started or stopped by a single push button. When the starting button is pressed, the motor starts in the usual manner as an induction motor and when it attains its rated speed, the synchronous element automatically is cut in. In addition, the compressor may be fitted with a pressure control, which will automatically stop and start the motor as the air pressure rises and falls. It is stated that a synchronous motor running under partial load is such an economical feature of the power factor that it is desirable to run the motor continuously and control the air through the usual pressure control.



THE CRANK SHAFT IS SUPPORTED ON THE TWO MAIN BEARINGS



LOCK NUT BUILT ON PRINCIPLE OF ALLIGATOR WRENCH

Wasteful Methods Used in Washing Manganese

Wasteful methods of washing manganese ore in the Kutais district in the Caucasus are depriving the world of great quantities of the ore and are of international concern on account of the relatively-small reserves of high-grade manganese ore, C. E. Julihn, of the federal bureau of mines, told the institute of politics at Williams college, Williamstown, Mass. Much of the waste, it was declared, is due to the desire to meet "an unreasonable and unnecessary trade requirement" for 52 per cent ore. In the Kutais district the ore is 47 per cent grade, and about one-half of the total mined is lost in order to appreciate the remaining 5 per cent. According to Mr. Julihn, 20 per cent of this manganese ore is marketed in the United

States and 40 per cent in Great Britain. It was pointed out that there are no established international agencies to consider such wastes of natural resources, and consumers "are most concerned with obtaining the highest possible grade of material without thought or responsibility as to the future of world industry."

Centerless Grinder Has Tilting Feed Bracket

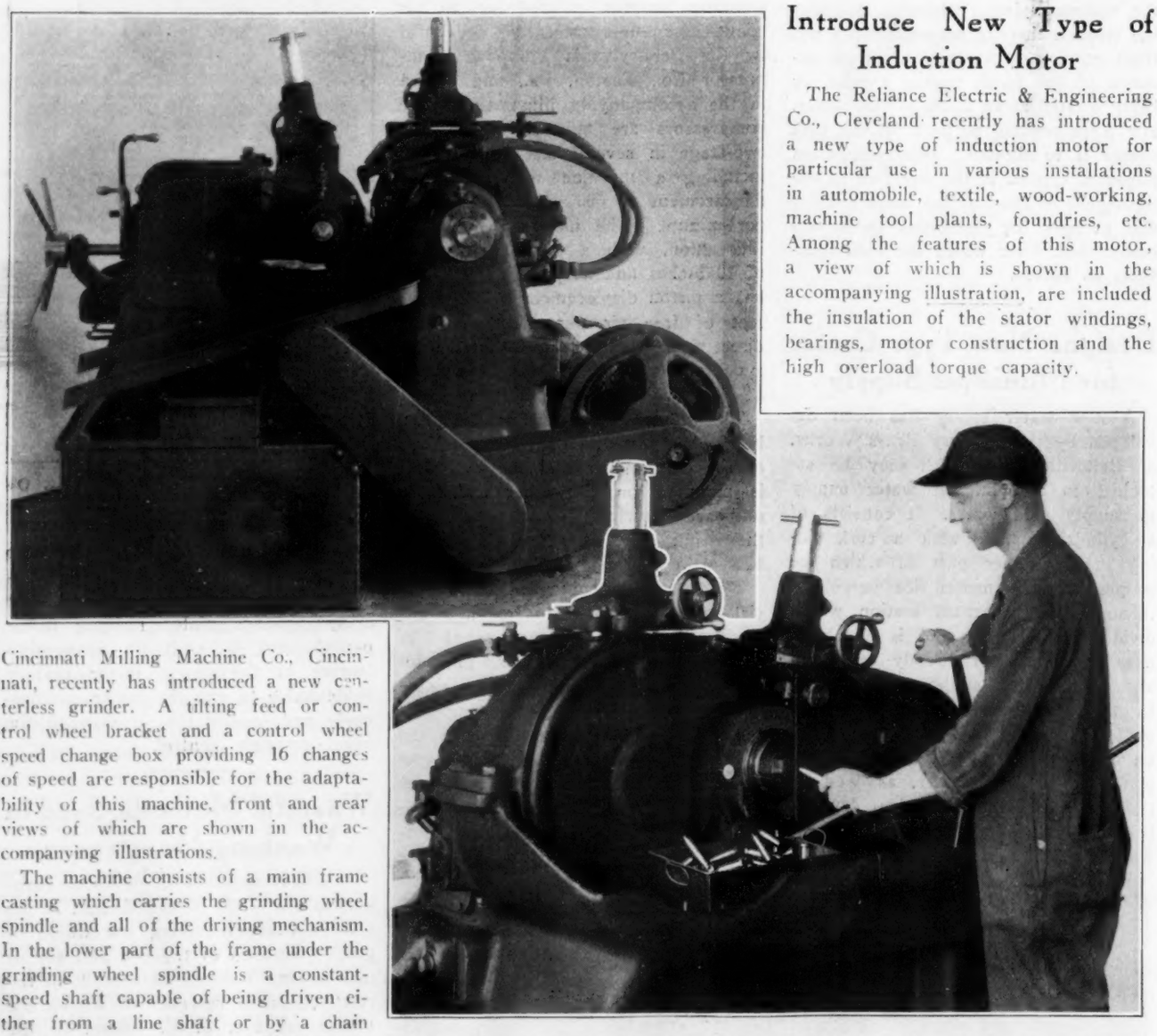
To obtain the proper grinding conditions for a wide variety of work, the Cincinnati Milling Machine Co., Cincinnati, recently has introduced a new centerless grinder. A tilting feed or control wheel bracket and a control wheel speed change box providing 16 changes of speed are responsible for the adaptability of this machine, front and rear views of which are shown in the accompanying illustrations.

The machine consists of a main frame casting which carries the grinding wheel spindle and all of the driving mechanism. In the lower part of the frame under the grinding wheel spindle is a constant-speed shaft capable of being driven either from a line shaft or by a chain from a motor mounted on the bed. A 5-inch belt runs up the main grinding wheel spindle from this shaft. The drive for the control wheel is taken from the constant speed shaft. The housing is gibbed to a subslide to which it can be securely locked. Both the subslide and the control wheel housing can be moved forward as a unit or individually by means of a large pilot wheel. With the upper and lower slides adjustable independently, a proper working set-up can be made rapidly.

The grinding wheel spindle is a heat-treated chrome nickel steel forging, and is mounted on the main frame of the machine. Independent truing devices are mounted on each wheel guard where they are in position for use at any time. The grinding wheel truing device consists of a dovetail slide hinged at one end and supported on the other by an adjusting screw. The diamond is carried in a sleeve mounted on the sliding bracket which is moved across the wheel by a hand wheel.

The standard rest takes work from ⅜ to 1½ inches in diameter, and an optional work rest takes from 1½ to 3 inches. The grinding wheel is 20 inches in diameter with a 3-inch face and a 5-inch hole, and the control wheel is 12 inches in diameter with a 3-inch face and a 5-inch hole and both wheels are mounted on collets. A 10 to 15 horsepower, constant-speed motor running from 1200 to 1800 revolutions per minute can be used. The main grinding wheel and constant speed shafts are automatically oiled.

The universal work rest consists of a rigid cast iron block mounted on the lower slide and carrying the work support blade and four adjustable work guides. Each guide section can be adjusted and locked independently by means of a thumb knob at the top of the rest. This construction makes it possible to change from one diameter work to another rapidly and without dismantling the machine in any way.



SPEED BOX PROVIDES 16 CHANGES OF SPEED ON THIS CENTERLESS GRINDER

Introduce New Type of Induction Motor

The Reliance Electric & Engineering Co., Cleveland recently has introduced a new type of induction motor for particular use in various installations in automobile, textile, wood-working, machine tool plants, foundries, etc. Among the features of this motor, a view of which is shown in the accompanying illustration, are included the insulation of the stator windings, bearings, motor construction and the high overload torque capacity.

The frames of this type of motor in sizes up to 25 horsepower, 1800 revolutions per minute are of riveted construction. The stator punchings, of special electrical sheets, are assembled with flanges under a 10-ton pressure. Large rivets are inserted, the ends electrically heated and then upset. The end flanges are ribbed to give greater support to the stator

laminations. The feet which are cast integral with the flanges are thick and solid. The slots in the stator punchings are semienclosed with a ⅛-inch opening at the top of the slot. The liberal opening makes winding easy and at the same time increases the overload torque capacity of the motor.

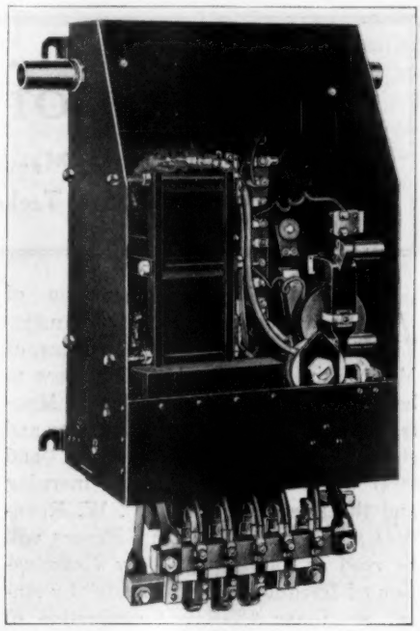
Coils are wound of cotton-covered enameled wire, and are held in place by fibre wedges. Bearing brackets are rugged, completely protecting the heads of the stator coils. The rotor bars are hard drawn copper made to fit tightly in the slots. The end ring of copper is cast onto the extensions of the bars. A standard type auto transformer is included as part of the equipment for motors over 7½ horsepower.

Builds Compensator of Manual Type

The Electric Controller & Mfg. Co., Cleveland, recently has introduced a manual automatic compensator which is applicable to the starting of alternating current motors. View of this new device with the outside cover removed is shown in the accompanying illustration.

With this manual automatic compensator the only operation required from the operator is the throwing of the handle into the starting position. When this handle is thrown the motor is connected through the transformers in the compensator to the line. After the motor has accelerated to a speed sufficient to allow the motor to be thrown across the line, a relay operates a mechanism in the compensator which automatically throws the compensator from the starting position to the running position.

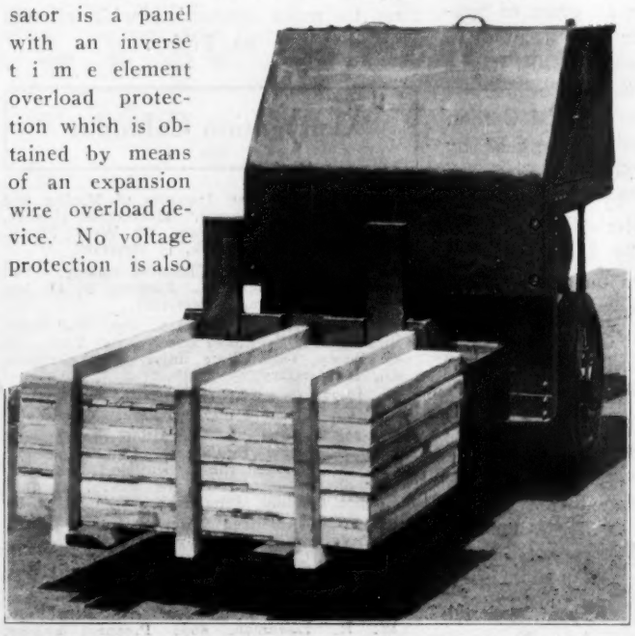
Mounted on the top of the compensator is a panel with an inverse time element overload protection which is obtained by means of an expansion wire overload device. No voltage protection is also supplied so that in case of overload or failure of voltage, it is necessary to go back to the compensator and throw the starting handle in order to start the motor. The use of this compensator makes the motor as easy as throwing a knife switch, and the motor is protected at all times from hard usage at the hands of the unskilled laborer.



COMPENSATOR USED TO START ALTERNATING CURRENT MOTORS

Designs General Utility Electric Truck

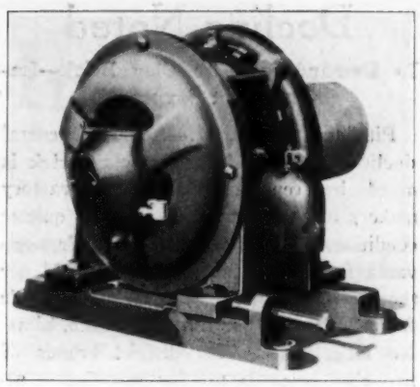
To enable one man to handle 2500-pound loads in all parts of the factory or mill yard, the Elwell-Parker Co., Cleveland, recently has introduced a new type of lift truck. This new carrying mechanism consists essentially of an electric truck with provisions made for the carrying of loads beyond the front axle. The platform, which is made up of a set of folks, is so arranged that it can be lowered to the floor if necessary and can be stopped at any point between the upper and lower limits. The forks are relatively thin, which allows the outer ends easily to be inserted beneath a bundle box bale, barrel casting of any irregular shaped piece weighing up to 2500 pounds.



LIFT TRUCK WITH A CAPACITY OF 2500 POUNDS

The length of the arms of forks depends on the weight carried since the load placed on the platform must be balanced by the weight of the truck back of the axle. To take care of the great weight the front axle is of a special design with wide spread roller bearings. Steering is accomplished through both front and rear wheels. The raising mechanism consists of a separate motor with worm gear reduction attached to a movable platen supported on the truck frame by means of three rocking links. This electric lift mechanism is simple in construction and is assembled as a unit.

The power or propelling unit of this truck consists of a heavy duty motor and controller direct connected through a flexible coupling to worm and wheel with bevel pinion differential running in oil. Drive shafts with chrome vanadium universal joints and with clutch plate bolted to the outside of the wheels complete the full floating drive axle. To avoid any kick-back at the steering handle when the wheel hits a floor obstruction, the knuckles on both the drive and the front wheels are located close to the center of the tires. A view of the new machine is shown in the accompanying illustration.



INDUCTION MOTOR ADAPTABLE TO FOUNDRIES AND MACHINE TOOL PLANTS

Asks Receivership

Elmer Mattern has been named temporary receiver for the Wabash Foundry company, Wabash, Ind., in the suit of the County Loan & Trust company. N. G. Hunter is attorney for the bank which filed suit asking that the temporary receiver be named and that on hearing the receivership be made permanent. Mattern filed bond of $25,000 and was authorized by the court to operate the plant until further notice.

Decline Noted

In Demand for Fire Clay Brick—Improvement Expected

Pittsburgh, Aug. 21.—A fairly general decline in demand for fire clay brick is noted by representatives of refractory makers in this district. Reflecting quieter conditions, the price on No. 1 Pennsylvania fire clay brick has declined $3 per thousand, this grade now being quotable from $45 to $48 per thousand, f.o.b. kilns. No large inquiry for district brands of fire clay brick is up for negotiation although producers entertain hope that the quotation now on a lower basis will inaugurate an improvement in the buying interest. Consumers apparently are depending upon their stocks to take care of repair work that arises, for there has been an absence of any fairly large request in the market over the past two weeks. Silica brick producers expect blast furnace operators to show renewed interest before long inasmuch as stacks during their present campaign have been pushed rather hard and doubtlessly will have to undergo relining or patching, necessitating replacement of spare linings carried in stock.

Pennsylvania silica brick quotations show no deviation from $45 to $47, despite inactivity in demand. In the Maryland district the trend of inquiry is slightly upward with iron producers taking a more active interest in the purchasing of refractories supplies. While new projects up for immediate consideration are lacking, still September promises to bring out fresh inquiry. In this connection, officials of the Columbia-Elyria Power Co., Elyria, O., are preparing to proceed with the construction of a new power plant to supply current to the works of the Columbia Steel Co. and the Elyria Iron & Steel Co., Elyria, O. Negotiations for the equipment will be conducted within the near future. The Pennsylvania & Ohio Power & Light Co. plans to build a large power station in Wayne county, Pennsylvania, and will seek its brick requirements this year.

Refractories

FIRE CLAY BRICK
(Per 1000 f.o.b. works)

Pennsylvania, No. 1	$45.00 to 48.00
Pennsylvania, No. 2	43.00 to 46.00
Ohio, No. 1	45.00 to 47.00
Ohio, No. 2	40.00 to 43.00
Illinois, No. 1	48.00 to 50.00
Illinois, No. 2	45.00 to 47.00
Kentucky, No. 1	45.00 to 47.00
Kentucky, No. 2	40.00 to 42.00
Missouri, No. 1	43.00 to 45.00
Missouri high grade	48.00 to 53.00
Maryland, No. 1	50.00 to 53.00
Maryland, No. 2	44.00 to 47.00

SILICA BRICK

Pennsylvania	45.00
Chicago	52.00 to 54.00
Birmingham	48.00

MAGNESITE BRICK
(Per Net Ton Seaboard Base)

9 x 4½ x 2½	$65.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$50.00

Study Improved Methods

Leading faculty members of scientific schools recently spent five weeks of their summer vacation studying electrical equipment production facts at the East Pittsburgh and Southern Philadelphia works of the Westinghouse Electric & Mfg. Co. The object of the conference was to bring the men in charge of the electrical engineering departments in the various technical schools throughout the country in close touch with the latest production methods, thereby giving them a broader viewpoint of industry in general so that they might be better fitted to teach their respective subjects. Each professor specialized in some particular activity of his own choice. At the same time members of the group participated in a daily conference with one of the departmental heads. The conference program brought to the teachers the experiences of specialties on various phases of electrical, steam and auxiliary equipment.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

A CONSIDERABLE portion of the program of the 128th meeting of the American Institute of Mining and Metallurgical Engineers to be held at the Mount Royal hotel, Montreal Aug. 30, will be devoted to iron and steel papers. Sessions on iron and steel will be held both in the morning and the afternoon and J. V. W. Reynders will act as chairman. Papers will be read as follows: "X-Ray Examination of Irregular Metal Objects" by Ancel St. John; "X-Ray Examination of Steel Castings" by H. H. Lester; "Nitrogen in Steel" by C. Baldwin Sawyer; "Desulphurizing Power of Iron-Blast-Furnace Slags" by Richard S. McCaffery and Joseph F. Oesterle: "Effect of Silicon on Equilibrium Diagram of System Carbon-iron, near the Eutectoid Points" by H. A. Schwartz, H. R. Payne and A. F. Gorton; "Some Commercial Alloys of Iron, Chromium, and Carbon in the Higher Chromium Ranges" by C. E. MacQuigg; "Some Effects of Zirconium in Steel" by Alexander L. Field; "Selecting Material for Formed and Drawn Parts" by L. N. Brown. Simultaneously, papers on geology and various mining subjects will be presented at other sessions.

* * *

To Inspect Range

Further announcements have been made concerning the twenty-third annual meeting of the Lake Superior Mining Institute which will be held in the Lake Superior ore regions Aug. 29-31. The headquarters during the trip of inspection will be at the Spalding hotel, Duluth. On Wednesday, Aug. 29, members will report at headquarters immediately on arrival for registration and receive transportation assignments. In the afternoon an inspection will be made of the plants of the Minnesota Steel Co. A banquet and business session will be held in the evening and the party will leave Babbitt on a late train. On Thursday the party will visit the plant of the Mesabi Iron Co. and will spend the remainder of the day on the Mesabi range. A business session will be held at Hibbings after which the party will leave by a special train for the Cuyuna range. Delegates will arrive at Crosby on Friday and will spend the day visiting various mines. Schedules will be arranged for returning to Superior and Duluth in time to make connection with all the evening trains on Friday.

Convention Calendar

Aug. 20-30—American Institute of Mining and Metallurgical Engineers. Meeting at Quebec, Canada. F. F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

Sept. 10-14—American Chemical society. Fall meeting, Milwaukee. L. Parsons, P. O. box 1515, Washington, is secretary.

Sept. 17—American Ceramic society. Fall meeting, Grand Central Palace, New York. R. C. Purdy, Ohio State university, Columbus, O., is secretary.

Sept. 17-22—Chemical Industries. National exposition, Grand Central Palace, New York.

Sept. 24-28—American Association of Iron and Steel Electrical Engineers. Convention and exhibition, Auditorium, Buffalo. Headquarters of the association are located at 1007 Empire building, Pittsburgh.

Sept. 27-29—American Electrochemical society. Annual meeting at Dayton, O. Dr. Colin G. Fink, Columbia university, New York, is secretary.

Oct. 8-12—American Society for Steel Treating. Annual convention at Pittsburgh, W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Wright Machine Co., Worcester, Mass., will be incorporated to make machine screw products and an option has been secured on the plant of the former Critchley Machine Screw Co., in that city. George M. Wright, who was president and treasurer of the former Wright Wire Co., now a part of the Wickwire Spencer Steel Corp., and is now associated with his son in the G. F. Wright Steel & Wire Co., Worcester, is to be president of the new company. George B. Cunningham, who was assistant purchasing agent of the Wickwire Spencer Steel Corp., is to be treasurer, and A. R. Lemieux, who has been receiver for A. R. Mosler & Co., Mt. Vernon, N. Y., is to be general manager. The directors will include the officers and J. Verner Critchley, president of the Reed-Prentice Co., and George F. Wright, president of the G. F. Wright Steel & Wire Co.

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THROUGH F. L. Stack the Pacific Tin Smelting & Refining Co., 1500 West Fifty-third street, Los Angeles, states it is not in a position to give out an announcement regarding its plant at this time. The company still is in the organization stage.

* * *

THE Guiberson Corp., Dallas, Tex., has announced it is not in the market at the present time for equipment of any time and states that while it plans to enlarge its plant, this enlargement will take place over a period of time. R. A. Wilson is director of manufacture.

* * *

SPRIDGEON MACHINE CO., whose New York office is at 288 Fourth Avenue, has established a factory in Rockville, Conn., for the building and repairing of machinery for making lace, J. W. Spridgeon, president of the company, was formerly engaged in the same business in England.

* * *

DATE will be fixed shortly for the taking of bids by the department of public works at Milwaukee for a viaduct to connect Holton street with Brady street, in place of a present steel structure, 1148 feet long and 44 feet wide. The new bridge will be 1560 feet long and 78 feet wide, and will carry double street car tracks. The estimated cost is about $1,000,000. The tonnage of structural steel has not been figured, but will be available soon, according to R. E. Stoelting, commissioner of public works. C. E. Malig is designing engineer.

* * *

THE National Machine Co., manufacturer of printing presses, textile presses and heaters with factory at Wethersfield, Conn., has disposed of its business to the Thomson-National Press Co., a new corporation with headquarters at East and Nott avenues, Long Island City, N. Y.

* * *

COHMANN BROS. & KAHLER, stove manufacturers, New Albany, Ind., have just completed a $200,000 addition to their plant. New equipment of modern type is being installed. This is the second addition to the plant, an extensive new addition having been completed two years ago.

* * *

AT THE annual meeting of the stockholders of the Potomac Fire Brick Co., Piedmont, W. Va., held recently, the following officers were elected: President, John A. Caldwell; vice president, W. S. Smallwood; secretary and treasurer, John P. Miller; manager, W. F. Caldwell and assistant secretary, H. M. Allen.

* * *

GREEN Bay, Wis., will spend between $50,000 and $75,000 in installing a new system of gasoline engine driven pumps for the water works system in place of the present steam pumping equipment, which will be removed and sold. Plans are now being prepared and will be ready for bidders some time in September, it is said.

* * *

THE PUBLIC SERVICE BRASS CORP., Huntington Park, Los Angeles, Cal., has been organized to manufacture waterworks, gas and plumbers brass castings. William F. Schultheiss is president; W. N. Dill, vice president and sales manager; and Herman M. Schultheiss, treasurer. Frank Schultz is foundry superintendent.

* * *

CONSTRUCTION of new plant buildings to replace several to be razed is planned by the Michelmann Steel Construction Co., Quincy, Ill. The company recently increased its capital stock from $50,000 to $150,000. It advises it already has purchased the additional machinery needed for its new buildings. Henry L. Michelmann is secretary and treasurer of the company.

* * *

THE Chicago Iron & Metal Co., Chicago, has purchased in a liquidation sale the entire property of the J. S. Stearns Lumber Co. at Odanah, Wis., which is retiring from business. The property consists of two sawmills, one large planing mill, a power plant, machine shop, railroad shop and auxiliary buildings, all of which will be dismantled and the machiney removed.

* * *

WORK has been completed on a new factory building for the A. J. Braasch Heater Co., Hollywood, Cal., and with its enlarged quarters the company plans to increase its output of gas heaters and furnaces. Hamm & Grant, Inc., industrial engineers, 607 Ferguson building, prepared the plans for the building and carried out the construction work. The structure is 1-story, 45 x 150 feet, with clear span trusses, steel sash and cement floor.

* * *

THE American Piano Plate Co., Racine, Wis., has been organized as a subsidiary of the American Skein & Foundry Co. The piano plate department of the American Skein & Foundry Co.'s business has grown to such an extent that it has been deemed necessary to handle it distinct from the company's other products. New additions to the plant have been completed and modern equipment installed. Officers of the company are: President, W. F. Walker; secretary and treasurer, W. R. Mitchell and sales manager, J. F. Deacon.

* * *

SPEEDOMETERS and other automobile accessories will be manufactured and sold by the Lock-O-Meter Corp., 1915 Irving Park boulevard, Chicago. The company plans to erect a plant in about a year at which time it will purchase necessary equipment and machinery. The company is capitalized at $100,000. Officers are: President, Charles A. Jeske; vice president, Arthur M. Nellesen and Carl E. Swanson;

secretary, Ernest J. Lochrl; treasurer, Lyle M. Cleal; general manager, Frank J. Plank and chief engineer, J. W. Eskholme.

* * *

A FACTORY building at G and Columbus streets, Boston, has been leased by the Steel Wool Corp., where it will engage in the manufacture of special machinery for the manufacturing of steel wool. This wool is used extensively in industrial painting and for household purposes.

* * *

THE R. H. Long Motor Co., which recently purchased a large factory in Worcester, Mass., for the building of automobiles, has abandoned the plan and the cars will continue to be built in Framingham, Mass., by the same company. The Worcester factory will be rented for industrial purposes.

* * *

ADVICES have been received to the effect that F. W. Wurster Co., New York, has bought out the Concord Axle Co., Pennacock, N. H., including patents, etc. It is under the Wurster company and will continue to operate the Concord plant in addition to maintaining operations at its plant in Brooklyn, N. Y.

* * *

STOCKHOLDERS of the Wise-McClung Mfg., Co., New Philadelphia, O., met recently to consider plans for raising funds with which to operate the factory. The plant has been closed for several weeks. N. W. Senhauser acted as chairman of the meeting. A special committee was appointed at the request of the stockholders to meet with the present board of directors and devise a plan for erecting a working fund.

* * *

R B. COLLINS SPRAYER CO., 190 Territorial road, Benton Harbor, Mich., will erect a 2-story and basement factory building, 50 x 25 feet, to contain show room and offices, repair shop and machine shop. The building will be of brick and reinforced concrete construction. It will be equipped with a freight elevator and will be located at 142-148 Elm street, Milwaukee. The only equipment which the company will purchase at this time consists of a small pipe threading machine and a table saw.

* * *

ADVICES have been received from the Minnesota state reformatory, St. Cloud, Minn., to the effect it is planning the erection of a building to be utilized as a machine shop, plumbing shop, electrical department and for automobile repairing. The building will adjoin the power house and will be of rock face, gray granite. Floors and roof will be of reinforced concrete. All construction will be by inmate labor.

* * *

THE Houston Light & Power Co., Houston, Tex., will erect a new power plant on the Houston ship canal about 10 miles below Houston. The plant will contain two 20,000-kilowatt units and the building will be of brick and steel construction, 110 x 280 feet. It now is under construction and practically all of the contracts have been let. The Texas Construction Co. is erecting the structure.

* * *

CAPITALIZED at $25,000 the Bauer-Stuart Co., Springfield, O., recently was incorporated to engage in the manufacture of shock absorbers. The company does not plan to erect a plant but will lease quarters which it will utilize for assembly and shipping. Officers of the company are: President, Louis E. Bauer; vice president, Harve R. Stuart, secretary and treasurer, W. B. Kleeman. The officers with John M. Cole and Thomas Hodge compose the board of directors.

* * *

TWENTY prominent business men of Florence, Wis., and Iron Mountain and Crystal Falls, Mich., have formed a syndicate for the purpose of doing exploration work for iron ore on the Menominee range. The work has been speeded by the establishment of large works at Iron Mountain by Henry Ford. Several tracts have been taken on option and drilling will be started shortly. William H. Jobe of Iron Mountain has been elected president and manager of the syndicate; Edward Peterson, Florence, secretary, and Joseph Parry, Florence, treasurer. The services of Martin Moe of Florence as chief driller have been secured.

* * *

THE Hercules Motor Corp., a new company with a capital stock of $3,000,000 and of which E. A. Langenbach is president and H. A. Timken, chairman of the board of directors, has taken over the plant of the Hercules Motor Co., from E. A. Langenbach, who recently purchased it from the receiver. Charles Balough, who has been head of the plant since the opening in Canton will continue with the new company as vice president and treasurer. Gordon M. Mather, Toledo, and R. W. Galligher of Cleveland, complete the board of directors. H. P. Blake is secretary. The new company has good financial backing. The entire Hercules plant has been taken over and is now operating. The production for the first six months of the year averaged more than 1000 motors a month.

Demand Steady

For Light Oil Distillates and Prices Continue Unchanged

New York, Aug. 21.—Light oil distillates continue unchanged as far as price is concerned and most sellers find a steady and gratifying demand and sufficient sales to make a good volume of business. While the demand of consumers is not heavy, the situation is far from dull. Some producers are sold practically to the end of the year and are not seeking further business. Pure benzol is quoted at 25 to 27 cents in tank car lots at producers' works and toluol is three cents higher. Naptha and xylol are steady at 27 cents and 29 cents, respectively.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.25 to $0.27
Toluol	0.28 to 0.30
Solvent naphtha	0.27
Commercial xylol	0.29
Per Pound at Producers' Plants	
Phenol	$0.28
Naphthalene flake	0.08
Naphthalene balls	0.09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$3.05 to $3.10

Contract

Pure benzol	$0.27
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29
Per Pound at Producers' Plants	
Phenol	$0.28
Naphthalene flake	0.08
Naphthalene balls	0.09

*Spot distillates are subject to shading.

Sulphate of ammonia still is steady at $3.05 to $3.10 per 100 pounds at producers' works, with little demand. Export material is held at $3.30 to $3.35 in double bags but little is being moved at present.

More activity in demand for naphthalene flakes and balls is expected after the opening of September when aniline dye producers usually furnish additional demand for this material. At present the flakes are quoted at 8 cents and the balls at 9 cents per pound.

Consumption of Cement Is Increasing Steadily

Production of Portland cement in the United States in July amounted to 12,620,000 barrels, compared with 12,382,000 in June and 11,557,000 in July, 1922, the federal geological survey states. Shipments in July totaled 13,712,000 barrels, against 13,307,000 in June and 13,850,000 in last July. On Aug. 1 stocks of Portland cement were 8,076,000 barrels, contrasted with 9,168,000 July 1 and 8,433,000 Aug. 1, 1922.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields

JAMES A. STAIRS, who recently joined the staff of the Calorizing Co., Pittsburgh, has been active in the steel industry for more than 20 years. He was at one time night superintendent of merchant mills at the Duquesne Steel Works, and later was associated with E. L. McGary in consulting engineering work, during which time he had charge of early installations of open-hearth furnaces and mills at the plant of the Sharon Steel Hoop Co., Sharon, Pa. From 1904 to 1909 he was superintendent of the rolling mills of the Nova Scotia Steel & Coal Co. at New Glasgow, Nova Scotia, was vice president and superintendent of the Brown Machine Co., Ltd., New Glasgow, which position he left in 1918 to accept a position as general superintendent of Harroun Motor Corp., Wayne, Mich. Since the war Mr. Stairs has resided in Detroit and has been engaged in sales engineering work.

C. C. Huestis has been elected president of the newly reorganized Crawford & McCrimmon Mfg. Co., Brazil, Ind.

Frank Schutz has been made foundry superintendent for the recently organized Public Service Brass Corp., Los Angeles, Cal.

John W. Abel has resigned as cutlery sales manager of the Landers, Frary & Clark Mfg. Co., New Britain, Conn.

A. L. Kern has resigned as efficiency and developing engineer for the Richards-Wilcox Mfg. Co., Aurora, Ill. His plans for the future have not been announced.

A. N. Willsie has been made western sales manager of the Locomotive Stoker Co., with headquarters in Chicago, succeeding A. C. Deverall, resigned.

Donald W. Howe, for six years manager of the Grip Coupling Co., Ware, Mass., has resigned and will engage in a similar business in Baltimore, Md.

Victor E. Edwards, vice president of the Morgan Construction Co., Worcester, Mass., has returned from a two months' trip to California.

Colton N. Noble has taken charge of the New York office of the North & Judd Mfg. Co., New Britain, Conn., succeeding Robert Martindell, who has been placed in charge of the Detroit office.

John Harris, Schenectady, N. Y., has accepted a position as chief draftsman with the Pratt & Whitney Co., Hartford, Conn.

Arthur G. Mason has resigned as assistant postmaster of Gardner, Mass., to become office manager of the Clinton, Mass., works of the Wickwire Spencer Steel Corp.

John R. Hayward has been appointed southern representative of the Davis Brake Beam Co., Johnstown, Pa., with headquarters in the First National Bank building, Roanoke, Va.

Hollinshead N. Taylor, president of N. & G. Taylor Co., Philadelphia, has returned from a motor trip through southwestern England and the Welsh tin plate district.

Joseph F. Owens, an official of the Lapointe Machine Tool Co., Hudson, Mass., will sever his connection with the company Sept. 1, to return to Syracuse, N. Y., where he builds broaching machines.

Hewitt Wells, who has been district sales manager in Washintgon for the Concrete Steel Co., has resigned, effective Sept. 1, and will assume the presidency of the Washington Steel Form Co., of Washington.

Harry W. Goddard, chairman of the board of directors of the Wickwire Spencer Steel Corp., Worcester, Mass., returned on the OLYMPIC, Aug. 15, from a three months trip to England, Scotland and France.

Rudolph Stern, vice president and general manager of the National Marine Lamp Co., Forestville, Conn., who was granted six months' leave of absence in June, has resigned. William J. Malone, a director, has succeeded J. Kleinberger, New York, as secretary of the company.

Peter G. Vanderput for 11 years superintendent of the foundry at the Ford Motor Co. plants at Highland Park and at River Rouge, Mich., recently resigned to enter the mercantile brokerage business, handling foundry supplies and other lines.

Chas. B. Goldsborough has been elected secretary-treasurer of the American Machine & Foundry Co., International Cigar Machinery Co. and the Standard Tobacco Stemmer Co., 511 Fifth avenue, New York, with plants in Brooklyn. Mr. Goldsborough thus resumes the connection from which he retired in 1914.

William B. Gilles, works superintendent of the Steel & Tube Co. of America, Chicago, under its former management, has been appointed manager of the plants at Indiana Harbor, South Chicago, Evanston, Ill., and Kalamazoo, Mich., under the new organization which brings these plants under the control of the Youngstown Sheet & Tube Co.

H. T. Bradley has been appointed manager of eastern railroad sales for Joseph T. Ryerson & Son, Inc., with offices in New York City. Mr. Bradley joined the Ryerson company in 1906 as a sales engineer in the machinery department. For the past seven years he has been associated with the railroad division as assistant manager.

M. D. Hopkins has been placed in charge of the Chicago office at 20 East Jackson boulevard, of the Max Ams Machine Co., New York, effective Sept. 1. Mr. Hopkins is well known to canmakers and packers of the Middle West and for a number of years represented the Angelus Sanitary Can Machine Co., Los Angeles.

Dr. H. I. Ries, professor of geology at Cornell university, who was made an honorary member of the American Foundrymen's association, was the pioneer in this country in investigating foundry sand testing methods. His work has helped to induce the geological survey departments of several states to undertake the investigation of foundry sand resources.

Theodore W. Stedman, Peking, China, Edward C. Anderson, Buenos Aires, Argentine, Charles J. Molineaux, and Thomas L. A. Taylor, London, Eng., representatives of the United States Steel Products Co., have finished a course of instruction at the Worcester, Mass., works of the American Steel & Wire Co. Mr. Stedman is manager of the Chinese office and the others are assistant managers of their respective offices.

Seek New Tin Plate Standards

Conference on Canners' Material Recommends More Definite Terms—Manufacturers Win Decisive Victory Over Packers Who Charge Inferior Quality Is Responsible for Damaged Food

WASHINGTON, Aug. 21.—Manufacturers of tin plate and canners' cans scored a decisive victory over canners at the conference held last Wednesday at the bureau of standards. Representatives of the canners charged that the quality of tin plate has been lowered and much waster plate is being used, to the detriment of the canning industry. The aim of the canners was to have the federal government begin setting up standards governing the gage and quality of cans.

Tin plate and can manufacturers refuted the charges, with the result the proposal of Dr. G. K. Burgess, director of the bureau of standards, that a committee be appointed to resume research work and collate data already at hand was not adopted. The conference's action was limited to referring back the matter to parent organizations and approval of the idea that standard terms for classifying waster plate and for standard terms for use in contracts governing the purchase of tin plate be set up.

Some sweeping indictments and an impressive collection of inferior cans were presented to the conference of canners, can makers, tin plate makers, grocers' association officials and government officials by Dr. W. E. Elwell, of Portland, Me., chairman of a special committee of the National Canners' association. Dr. Elwell charged that since 1918 the quality of cans has deteriorated to a marked extent, causing extensive losses to the canners through discoloration of food and perforation of the cans by the reaction resulting from the food touching the steel base of the cans where the tin coating was insufficient. The use of waster plate in the making of cans was likened by him to the inclusion of bad apples in the center of a supposedly good barrel. The use of light-gage base has resulted in bulging in the canning process, he alleged. In some instances, he said, base plate has been so poor holes in it have been plugged up by the tin coating, only to develop after the canned goods were on grocers' shelves. His charges of faulty inspection of tin plate at canning factories was reiterated by E. S. Lincoln, also of Portland, Me. Defective tops that had crept into a shipment of alleged good ones, along with motion pictures of various can-making processes and X-rays of faulty tin plate were exhibited.

Representatives of can manufacturers, including the American Can Co., declared, and some canners present admitted, that the difficulties of the canning industry are due more to insufficient knowledge concerning the canning of foodstuffs than to the quality of the containers. W. B. Colvin, of the bureau of chemistry, department of agriculture, declared that discoloration has been greater in cans running 3 pounds of tin to the base box than in cans running only 1½ pounds. The degree of tin coating was held to be a negligible factor; it has nothing to do with discoloration and has only a slight effect upon perforation, it was maintained. Tests were cited where vegetables from different fields were put up in cans of identical quality, the products of one field would be preserved perfectly while the products of another field would turn black in a short time. Makers of tin plate and cans asserted they have been doing research work of their own and have come to the conclusion canners are faced with a chemical reaction of food in containers over which neither the canners nor the can makers have any control.

Change Not Advisable

S. A. Davis, vice president of the American Sheet & Tin Plate Co., Pittsburgh, said that defects in tin plate can be minimized but not wholly eliminated. Any radical change in tin plate manufacturing practice is not advisable, he maintained. It would be impossible to maintain exact uniformity without discarding 40 per cent of each ingot, he said. E. E. Gibbs, of the Southern Can Co., Baltimore, asserted that the quality of tin plate has been improving. Dr. R. A. Baker, of the American Can Co., pointed out that grease and imperfect rolling make some waster spots inevitable, but these spots are eliminated, so far as possible, in the making of cans. But, he added, waster spots are not the basic cause of spoilage.

Representatives of the American Canners' association voiced their appreciation of the helpfulness accorded them by both the makers of tin plate and of canners' cans, whom they said appeared to be in accord with the effort to obtain improvement. A brief presented by Dr. Elwell and summarizing the program of the canners says in part:

"It is known that under present practice in the steel and tin plate mills, a considerable percentage of the tin plate turned out is of inferior quality. It is believed that this large percentage, variously estimated at from 15 to 30 per cent and differing at different seasons of the year, could be materially reduced by proper inspection and selection of steel bars and the careful sorting of steel plate before tinning; that inferior plate and bars should be cast aside and should not be put through the tin pot. Under present practices, there is a large waste of tin, which it is recognized is available in only limited quantities resulting from the practice of tinning plate of poor service value.

"It is hoped that the bureau will find it practicable to make a study of the various grades of tin plate now manufactured in this country and develop standard terms applicable to each, which when used in contracts will have a definite meaning before the courts. Practices as to the amount of tin coating have been radically changed since tin plate was first manufactured on a large scale in the United States.

" 'COKE PLATE' (a term which long since lost its original meaning) formerly carried a considerably higher percentage of tin coating than the plate sold under this term today.

"The next higher grades are supposed to carry ¼ and ½ more tin respectively per base box. It will be seen that if these increased amounts over the lower grades are maintained, the reduction in the amount of tin coating applied to the lowest grade automatically reduces the amount of tin coating upon the next higher grades and so on.

"The term 'COKE PLATE' under present day practices is a misnomer. Coke is no longer used in its manufacture. The use of this term should be discarded and a more definite term substituted. The same criticism may be justly applied to the term 'charcoal plate' and 'canners special plate.' Charcoal is no longer used in the manufacture of the former and canners' special is not especially good for canners.

"The term 'waster' is too general in its application. It is hoped that the bureau will find it practicable to classify the various grades of waster plate now accruing in the course of manufacture of tin plate and adopt standard terms applicable to and so far as practicable descriptive of each of the various kinds of so called 'WASTERS.'

"It is considered important that reasonably definite standards for the gage of plate to be used for five or six of the regular sizes of cans most commonly used for the preservation of human foods should be determined and defined."

Public utility power plants in June

had an output of 151,000,000 kilowatt hours daily, or substantially the same figure as in May, according to the federal geological survey. The 1922 daily average production of these plants was 130,600,000 kilowatt hours. Waterpower accounted for 38.9 per cent of the June total.

Charge Rate Differential Is Ignored

Washington, Aug. 21.—In attempting to bring freight rates on iron and steel articles from Pittsburgh to the Virginia cities to the higher level of Columbus, O., and Cleveland, the trunk lines violated a decision of the interstate commerce commission five years ago declaring that the rate from Pittsburgh to the Virginia cities should not exceed the corresponding rate to New York by more than 3 cents per 100 pounds, the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., alleges in a brief filed with the commission. The proposed rate, which the commission has suspended and which the Newport News company requests be permanently suspended, would make the differential 6½ cents.

The Newport News company points out that the rates from Pittsburgh to the Virginia cities should be governed by the direct Pennsylvania and Baltimore & Ohio lines, and attacks the proposal of the Chesapeake & Ohio railroad to obtain some of this business by making the rate from Pittsburgh as high as the rate from Columbus, which is its junction with Pittsburgh traffic. The Newport News company also says in its brief:

"There has never been before the commission a proceeding in which comprehensive consideration has been given to the classification of iron and steel articles. That fifth class is excessive and unreasonable is indicated by a number of comparisons submitted by the protestants showing that under the proposal of the carriers the rates on iron and steel articles, loading to nearly 100,000 pounds and shipped largely in open cars, would be as high as the rates on coffee, sugar, writing paper, printing presses, gas stoves, cream separators and numerous other commodities upon which the rates should obviously be higher."

Production of Fire Clay Again Declines

For the second consecutive month production and shipments of both silica and fire clay brick show a decline, according to figures recently compiled by the Refractories Manufacturers' association. Shipments of fire clay brick during July were 3 per cent less than total shipments of the month previous, while shipments of silica brick during the same period declined 6 per cent to 53 per cent of the manufacturing capacity reporting. Stocks of fire clay brick on hand July 31 show an increase of 7 per cent, while those of silica brick remain unchanged. Net new silica brick business declined 11 per cent but business booked by fire clay brick manufacturers increased 2 per cent. Detailed figures follow:

FIRE CLAY

	July 31, 1923	June 30, 1923
Capacity reporting	74,591,977	75,341,977
On hand last day preceding month	155,573,382	152,193,088
Production	56,976,868	61,165,622
Shipments	54,607,581	57,785,328
On hand last day current month	157,942,669	155,575,382
New orders received during month	45,773,431	44,875,776
Cancellations	605,177	594,192
Net new business	45,168,254	44,281,584
Unfilled orders last day current month	79,926,439	89,365,766

SILICA BRICK

	July 31, 1923	June 30, 1923
Capacity reporting	22,565,500	22,565,500
On hand last day preceding month	34,210,226	34,960,553
Production	11,980,788	12,608,422
Shipments	12,047,202	13,258,749
On hand last day current month	34,243,812	34,310,226
New orders received during month	8,351,087	10,293,682
Cancellations	556,712	1,000
Net new business	7,794,375	10,292,682
Unfilled orders last day current month	30,775,050	34,927,877

Car Loadings Exceed Highest Estimate

WASHINGTON, Aug. 21.—In a report upon the progress made to provide adequate transportation the American Railway association points out that in the first 31 weeks of 1923, ending with Aug. 4, the railroads loaded 28,990,341 carloads of freight, or 3 per cent more than the highest estimates. In the same weeks of 1922 the railroads loaded only 24,115,037 carloads, and in 1921, still fewer or 22,470,984. By commodities, the association cites loading for the opening 31 weeks of 1923, 1922 and 1920:

	1923	1922	1920
Grain and products	1,246,520	1,356,700	1,036,334
Live stock	980,269	876,951	900,494
Coal	5,723,686	3,803,625	5,653,939
Coke	461,173	264,511	340,599
Forest products	2,257,852	1,691,029	1,879,059
Ore	1,268,746	745,086	1,215,656
Mdse. L. C. L. and misc.	17,052,095	15,377,135	14,985,198
Total	28,990,341	24,115,037	26,011,279

This tremendous carriage of freight was due in part to the new equipment installed by the railroads. Between Jan. 1 and Aug. 1 the railroads had put into service 96,950 new freight cars and 2221 locomotives, and they had 86,716 freight cars and 1772 locomotives on order Aug. 1. The following table gives the description of the new equipment installed and on order:

Cars	Put in service Jan. 1 to Aug. 1, 1923	On order Aug. 1, 1923
Box	39,428	38,689
Refrigerator	12,070	9,299
Coal	39,181	34,457
Stock	2,279	2,214
Flat	2,324	1,805
Others	1,668	252
Total	96,950	86,716
Locomotives	2,221	1,772

In part this heavy loading has been made possible by the reduction of bad-order freight cars. On Aug. 1 the railroads had 189,014 freight cars or 8.3 per cent of the number on line in need of repair. On July 1 the number of bad-order cars was 190,411, and on last Jan. 1 the total was 216,011. On Aug. 1 the railroads had 11,555 locomotives or 18.1 per cent of the total on line in bad-order. This was quite a drop from the 15,549 and the percentage of 24.1 on Jan. 1. In the last half of July the railroads turned 22,200 repaired locomotives out of their shops, a high record for a half-month period.

Still another item in the betterment of the transportation condition is the increased reserves of coal. The railroads on Aug. 1 had 14,098,776 tons of coal stored, compared with 10,667,371 tons on July 1 and 6,756,886 on Jan. 1.

A factor that cannot be overlooked in the record loading of the railroads is the increased loading per car, to say nothing of the increased movement per car per day. The following table shows the improvement in this direction for the first half of this year:

Tons Per Car

	1923	1922	1921
Jan.	29.0	27.6	30.2
Feb.	28.2	28.3	28.4
March	27.9	27.7	27.2
April	27.6	24.4	26.9
May	28.0	25.0	27.8
June	28.2	25.4	27.7

Miles Per Car Per Day

	1923	1922	1921
Jan.	25.8	20.4	23.2
Feb.	24.8	23.2	21.3
March	27.0	24.4	20.9
April	28.0	21.3	20.6
May	28.6	22.6	21.3
June	28.3	24.0	22.0

While loading more than 1,000,000 cars of freight weekly the railroads have been able to build up and maintain a net surplus of freight cars. At this time the withdrawal of box cars for the movement of the West's grain to the East is cutting the surplus.

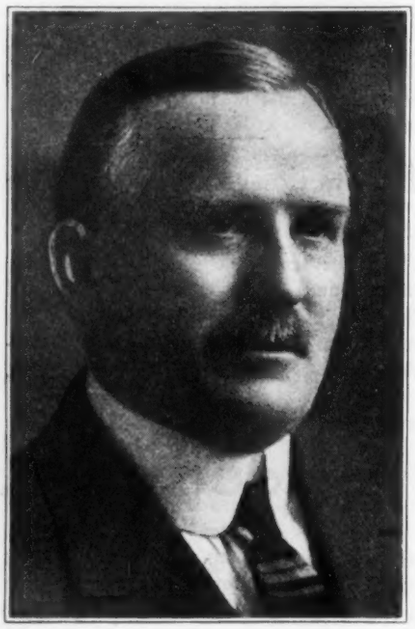
Obituaries

FREDERICK N. BEEGLE, president of the Standard Gauge Steel Co., the Union Drawn Steel Co. and the Beaver Clay Mfg. Co, New Galilee, Pa., died Aug. 16 in the Beaver Valley General hospital, New Brighton, Pa. He was 60 years old, having been born at Millersburg, O., May 21, 1863. He was educated in the public schools of Millersburg and the high school of North Manchester, Ind. He first was employed in a flax mill and stave heading factory and when 16 years old moved to Beaver Falls, Pa., where he was engaged in a small way in the wholesale produce business. At the age of 18 he managed a grocery store and at 20 joined the organization of the Hartman Steel Co., Beaver Falls, Pa., with which company he continued until it was absorbed by Carnegie, Phipps & Co. In 1889 he became connected with the Union Drawn Steel Co., later became assistant superintendent of the firm and in 1890 was made secretary and treasurer. Ten years later he was elected president of the company. Mr. Beegle was actively interested in many other companies, being president and director of the Davidson Ore Mining Co., Buffalo; president and director of the Union Drawn Steel Co., Ltd., Hamilton, Ont.; president and director of the Beaver Clay Mfg. Co., New Galilee, Pa.; vice president and director of the First National bank, Beaver Falls, Pa., and Bank of Pittsburgh, National association, Pittsburgh; treasurer and director of the Monterey Wire Nail Co., Monterey, Mexico; treasurer and director of the Alamo Mining Co, Monterey, Mexico; president and director of the Beaver Refrigerator & Potteries Co., New Brighton, Pa.; president and director of the Beaver Falls Water Power Co., Beaver Falls, Pa.; member of the Lake Erie and Ohio River Ship Canal board; president and director of the Ideal Tool & Mfg. Co., Beaver Falls, Pa., and director of the Copper Clad Steel Co., Pittsburgh. He was a member of a number of clubs and was active in public welfare and civic activities.

Simeon L. Guest, 74 years old, for many years superintendent of the Joseph Dick foundry is dead at his home at Canton.

William D. Swan, for 37 years general superintendent of the American Tube Works, Somerville, Mass., died at his home in Swampscott, Mass., Aug. 15, aged 72 years. He had been employed by the works for 52 years.

Raphel Pumpelly, widely known as a geologist and author, died at his home in Newport, R. I., Aug. 10. He was 86 years old. From 1866 to 1873 he was professor of mining at Harvard university and from 1869 to 1871 was



FREDERICK N. BEEGLE

state geologist for Michigan. Later he directed the exploration of discoveries inaugurating the development of most of the iron ore ranges of Michigan and western Ontario, from 1897 to 1901.

James L. Pilling, inventor and builder of electric and air-driven engines, tractors, etc., who was associated with the Blake Pump & Condenser Co. associates, Fitchburg, Mass., died unexpectedly in North Orange, Mass., Aug. 16, aged 75 years.

John I. Rogers of the Eagen-Rogers Steel & Iron Co., Crum Lynee, Pa., died August 13, following an operation for appendicitis. He was 40 years old and graduated from the engineering school of the University of Pennsylvania in 1904.

Thomas Ellis Brown, inventor, died Aug. 15 at his home in Morristown, N. J. He was chief consulting engineer for the Otis Elevator Co., and designed the modern high-speed elevator and its safety devices. The elevator in the Eiffel tower, Paris, was his design, as were the incline railways in the Catskill, Prospect and Beacon mountains. He was a member of the American Institute of Consulting Engineers, the American Institute of Mining Engineers and numerous New York clubs.

May Revive Savannah Locomotive Works

Creditors of the Savannah Locomotive Works, of Savannah, Ga., recently held a meeting and appointed a committee to investigate present conditions with a view to the reorganization of the company, and the resumption of operations at an early date at the Savannah plant. It is thought likely that the reorganization will be affected at an early date, and that the Savannah plant will again start production after improvements have been made.

Metals Index Declines

Washington, Aug. 21.—Wholesale prices continued in July the decline which began in May, with the result the July wholesale price index of the bureau of labor statistics was 151, compared with 153 in June and 155 in July, 1922. Wholesale prices declined in eight of the nine commodities covered and remained stationary in the ninth—housefurnishings. The July index for metals and metal products was 145, compared with 148 in June and 121 in last July. The index is based upon 1913.

Chile Plans Exposition

Washington, Aug. 21.—The Chilean congress is now considering the proposal of the President to hold in Santiago in 1924 an international exposition of products relating to mining and metallurgy. The exposition is intended to include all lines in any way connected with the mining industries. English and German manufacturers have displayed especial interest in the proposal.

Morton Jones & Co. is the name of a new corporation formed at Asheville, N. C., to engage in the manufacture of hot-air heating furnaces, etc. Morton Jones is president of the company.

Tool Market Shows Improvement

Several Districts Report Increases in Sales During the Week—More Inquiries Are Also Being Brought Out—Little Demand Found Among the Railroads—Crane Manufacturers Continue Busy

WHILE the general condition of the machine tool market is dull, a slight improvement has been noted in several of the leading centers during the past week. The buying seems to be scattered throughout many of the various industries, although considerable buying is being done by the automobile manufacturers, especially in the vicinity of Detroit. Dealers report an increase in inquiries for the week, a condition which has led to the belief that the midsummer slack period is about over. No price changes are reported.

Railroad demand has practically disappeared, the Elgin, Joliet & Eastern issued an inquiry for seven tools during the week and is understood to have purchased on the inquiry. The Canadian National has not acted on its recent inquiry. The Pere Marquette has closed on a fair sized list. It is reported that an inquiry for rolling mill equipment will be out shortly.

Dealers in secondhand machinery report a fair business. At the present time prospective buyers are looking for bargains in machine tools and are shopping around among the sellers of used machinery. The increase in sales has also been noted in this market.

The crane market continues active. Manufacturers report that they are sold ahead for from six to eight weeks and that all plants are busy. Steelworks, scrap dealers and railroads are the chief buyers of this class of equipment.

Demand Comes from Widely Diversified Sources

NEW YORK, Aug. 21.—Procrastination in buying, apparently awaiting a more definite indication of the course of the market, seems to be one of the principal causes of the present dullness in machine tools and shop equipment. Most dealers find inquiry lessening and prospective business is slow to close, buyers putting off final decision. The city of New York opened bids August 16 on three lathes, a radial drill, two grinders and a planer, awards on which will not be made for a fortnight. The General Electric Co. is inquiring for two lathes for its Schenectady works and the American Locomotive Co. for a single lathe. The Florence Pipe, Foundry & Machine Co., Florence, N. J., is in the market for a fairly large assortment of lathes, drill presses and boring mills. The Pere Marquette railroad has bought the following equipment: Three 5-foot radial drills, a rod borer, 42-inch vertical miller, 36-inch slab miller, 53-inch and 44-inch boring and turning mill, 36-inch planer, 100-inch tire boring mill, locomotive axle journal turning lathe, 6000-pound, 2500-pound and 1500-pound steam hammers, three axle lathes, pneumatic plate flanging clamp and various small lathes, milling machines and shapers. The Bassick Co. and the Charles Parker Co., both of Meriden, Conn., have bought a small cupola from the Whiting Corp. The purchase of 33 cranes from the same seller by the Pennsylvania railroad is a matter of note. The Public Service Electric Power Co., a subsidiary of the Public Service Corp. of New Jersey, has placed equipment orders for its new plant at Kearney, N. J. This includes 15 retort stokers from the Sanford Riley Stoker Co., Worcester, Mass., and 16 retort stokers from the American Engineering Co., Philadelphia. The International General Electric Co. has taken a contract for equipment for electrification of 35 miles of the Paulista railroad in Brazil.

Calendar and Selected News of Plant Liquidations, Wholesale Offerings, Auctions of Used and New Equipment, Etc., Page 94, Classified Machinery Section.

Conditions Are Better

CLEVELAND, Aug. 21.—A slightly better tone is noted in the machinery market in this district. Sales of machine tools and shop equipment have increased materially during the past week, although, as has been the case during the past two months, orders in practically all cases have been confined to single tools. The volume of inquiries has also increased and this condition has caused dealers to believe that the slack summer period has about passed. As a whole leaders in the industry in this district feel that the volume of sales will have increased sufficiently by the middle of September to compare favorably with business during the spring months. Inquiries recently reported call for a surface grinder, three automatic screw machines and a large 10-ton press.

The tools being sold cover practically all lines of work in many industries. Some sales are being closed with the automotive industry, although no large inquiries are developing from this source. It is expected that many of the companies will announce changes in models soon and that new machinery will be needed when active production starts on the line of cars to be offered next year. Along this line it is reported that the Maxwell Motor Corp. will equip the Maxwell and the Chandler with four-wheel brakes. It has been announced that the program for the Hudson Motor Co. has been reduced.

The demand in the second-hand market is also better, although no large sales are reported for the week. Inquiry for cranes is picking up, the demand coming from steelworks and scrap dealers. Manufacturers of cranes in this district are busy and are sold ahead as high as six or eight weeks in some cases. A number of inquiries are pending.

Sheet Working Tools Move

CHICAGO, Aug. 20.—While sales of most lines of machine tools continue dull in this market, a noticeable improvement both in inquiry and sales is reported for punch presses, shears and general sheet metal working tools. One of the principal dealers reports an improvement in general inquiry and several used tool dealers

have had slightly better sales during the past week. After the long period of little buying all interests are anxious to seize upon the first sign of an improvement and it is, therefore, not improbable that the somewhat better sales of the past week are of a temporary nature and not indicative of any general buying movement. Prices remain unchanged and the effect of the short hour talk in the steel industry seems to be spreading to machine tools. Consumers are less inclined to look for lower prices later in the fall. Sales of the past week include a large planer to a Chicago electrical manufacturer, several lathe and drill presses to a specialty manufacturer who has just recently completed a plant extension, and a shaper, drill press and two or three other tools to a Wisconsin manufacturer. The railroads at present seem to be especially inactive in the machine tool line. The Elgin, Joliet & Eastern railroad issued a list of seven tools wanted early in the week and is understood to have bought three or four of these. One or two other small railroad lists are out.

Market On Sound Basis

PITTSBURGH, Aug. 21.—Quiet conditions in the machine tool market continue to be encountered. That the market is on a sound footing is verified by a close observer of conditions who recently sounded out the trade in Detroit. His investigation bears out the opinion held in machine tool circles that consumers in that district, particularly those engaged in the automobile industry, anticipate good business throughout next quarter and well into 1924. To keep one step in advance, users of machine tools in that district expect to undertake replacement of machinery before the close of this year. Whenever there are three or four buyers for a particular machine, the situation is endowed with interest and dealers in this district feel confident that such a condition will prevail next month to break the current dullness.

Generally speaking, prospective buyers of machine tools in the present market want bargains for their money and unless such are offered it is difficult to close a sale. A fairly good demand exists for boiler shop machinery, such as structural punches and shears but even in this connection buyers are holding aloof from purchasing. Orders closed by one machinery house this week include a combination punch and shear and a small lathe and drill press. Another house reports the sale of two alligator shears and two plate shears, including one 72-inch unit. Inactivity continues in the industrial crane market as far as actual sales are concerned. Two or three inquiries for 10-ton cranes and units of smaller capacity are reported by a few district representatives but not much hope is entertained for early closing. An old inquiry for a traveling unit shows some signs of revival and a closing announcement is anticipated in another week. A seller of used cranes reports demand on a slightly broader scale but states sales are difficult to negotiate.

While sales of rolling mill equipment have been rather light of late, an inquiry shortly will be put out for two stands of 12-inch, four stands of 10-inch, and four stands of 8-inch cold strip mills, together with gang slitters, shears, and other auxiliary strip mill equipment.

See Business Increase

MILWAUKEE, Aug. 21.—The dull tone of business in metalworking machinery which has existed most of the summer is gradually giving way to greater activity, and numerous small orders were booked which are believed to be forerunners of better business after Sept. 1. Local foundries and machine shops are keeping up good working schedules and new orders as well as prospective orders point to an active fall and early winter season. Most makers and dealers are able to say that while they have been finding things quiet for several weeks, this is not more so than it usually is in the summer, and more men are steadily employed at this time than in the past three years.

Business Is Slack

BOSTON, Aug. 18.—The machine tool market has been flat. One house reported recent sales of a planer and special machines. What business is moving is largely small tools. No changes in prices were noted. One dealer reported some bona-fide inquiries which might develop into orders. His business for the week was better than that transacted in the middle of July, but was running behind April and May. The absence of so many officials on vacations renders it difficult for the tool trade to get in touch with them and for this reason traveling has been curtailed until they return to business.

Some business is reported in the second hand market, but the demand is slow also. The inactivity in this market is said to be due in no small degree to the numerous auctions of tools which are being held by the government and others in this section. The government, for example, is to hold a large sale of second hand tools at Squantum, Mass., beginning next Tuesday.

Bulletin Board

Requests for Equipment and Supplies, Trade Literature, Etc., Made Through IRON TRADE REVIEW

The Cincinnati Artistic Wrought Iron Works, 2941-43 Eastern avenue, Cincinnati, is desirous of securing a small foundry outfit with which to cast gray iron and brass castings.

Crane Awards and Inquiries of the Week

Orders Placed

One 15-ton bucket locomotive crane for Durant Motors Co., Flint, Mich., to the Industrial Works, Bay City, Mich.

One 30-ton locomotive crane for Isbell Porter Co., New York, to the Brown Hoisting Machinery Co.

One 20-ton locomotive crane for the Chesapeake & Ohio railroad to the Industrial Works, Bay City, Mich.

One 25-ton locomotive crane for the American Locomotive Co., Paterson, N. J., plant to the Browning Co.

One 10-ton electric crane for the American LaFrance Fire Engine Co., Bloomfield, N. J., to Philip T. King, New York, for the Bedford Foundry & Machine Co.

Twenty 1000-pound and one 2000-pound jib cranes, 11 1000-pound and one 2000-pound pillar cranes for the Pennsylvania railroad, Philadelphia, to the Whiting Corp., Harvey, Ill.

One 30-ton locomotive crane for the Toledo Furnace Co., Toledo, O., to the Industrial Works, Bay City, Mich., through Ridenour, Seaver & Kendig, Cleveland and Pittsburgh.

One 5-ton electric traveling crane for the Michigan Stamping Co., Detroit, to the Northern Engineering Works, Detroit.

One 5-ton 3-motor electric crane of the low type for the Pfaudler Co., Rochester, to the Northern Engineering Works, Detroit.

One 30-ton 30-foot span traveling crane and one 20-ton stationary hoist for power station service for the Indiana Electric Co., Indianapolis, to the Northern Engineering Works, Detroit.

One 4-ton electric transfer traveling crane for the Studebaker Corp., Detroit, to the Northern Engineering Works, Detroit.

Orders Pending

Three locomotive cranes, capacity not determined, for Western Electric Co., creosoting plants. Inquiry put out by American Telegraph & Telephone Co., New York.

One 105-ton crane for export to Japan. Inquiry by Okura & Co., 30 Church street, New York.

One standard 10-ton electric crane, 23-foot 8-inch span, for the Fitzgibbons Boiler Co., New York. This replaces former inquiry for 20-ton crane with 5-ton hoist.

One 15-ton electric crane for the Brooklyn Edison Co. Bids in.

Two 10-ton electric cranes for the General Electric Co., Schenectady, N. Y. Bids in.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

NEW HAVEN, CONN.—The Connecticut Co., 22 Church street, plans the erection of a 1-story machine and repair shop.

WATERBURY, CONN.—The Oakville Co., manufacturer of pins, metal clips, etc., has awarded a contract for the erection of a 5-story plant addition.

WILMINGTON, DEL.—The Speakman Co., 816 Tatnall street, manufacturer of steam supplies, has awarded a contract to John E. Healy & Son for the erection of a 3-story addition to its plant, 60 x 75 feet.

CHICAGO—The Majonnier Bros. Co., 739 West Jackson boulevard, plans the erection of a 1-story factory building, 125 x 200 feet, to be built at an estimated cost of $75,000.

CHICAGO—The Reynolds Electric Co., 2650 West Congress street, plans the erection of a 1-story storage building, 50 x 75 feet, to be built at an estimated cost of $15,000.

CHICAGO—The Chicago Window & Door Screen Co., 5118 South State street, is drawing plans for the erection of a 2-story factory building, 57 x 112 feet, to be built at an estimated cost of $50,000.

CHICAGO—The Crown Rheostat & Supply Co., 35 South Desplaines street, is having plans prepared for the erection of a 2-story building, 50 x 72 feet, to be built at an estimated cost of $28,000.

CHICAGO—The Peterson Sand & Gravel Co., 3240 North California avenue, has been incorporated with $100,000 capital stock by C. A. Peterson, G. R. Bascom, H. R. Hanson, H. M. Railton and Catherine Immel. The company is represented by Joseph P. Immel, 3129 North California avenue.

CHICAGO—Wilcor, Wyman, O'Rourke Co., 4824 West Lake street, has been incorporated with $30,000 capital stock to manufacture hardware articles and operate a machine shop, by W. F. O'Rourke, F. M. Wyman and H. L. Cavender. The company is represented by Cavendor & Kaiser, 155 North Clark street.

CLEARING, ILL.—The G. H. Morrill Co., 157 Harrison street, Chicago, plans the erection of a 1-story factory building, 40 x 252 feet.

DECATUR, ILL.—The Mi-Flier Mfg. Co., 1604 North Church street, recently was incorporated with $25,000 capital stock by Harvey A. Sellers, John Hohn, B. T. Sellers and B. K. Hohn.

KOKOMO, IND.—The Turner Mfg. Co., 112 West Jefferson street, plans the erection of a 2 story factory building, 50 x 100 feet.

KOKOMO, IND.—The Kokomo Steel & Wire Co. has had plans drawn for the erection of a 1-story factory addition, 90 x 400 feet.

BOSTON—The Gravitite Corp. has been incorporated to make a gas piping device with $100,000 capital by Alexander Bannwart, William M. McMaster and Bancroft Abbott, North Wilmington, Mass.

HOLYOKE, MASS.—The Holyoke Foundry Co. has let the contract for the erection of a sizeable addition.

LAWRENCE, MASS.—The Smith Motor Car Co. has been incorporated to build automobiles with $200,000 capital by Wilbert J. Smith and G. E. Smith, both of Andover, Mass., and K. Garceau.

LOWELL, MASS.—The Samuels Manifold Co. has been incorported to make automobile devices with $200,000 capital by Philip Samuels, John Francis Connors and Daniel Francis Sullivan.

LYNN, MASS.—The Pickering Coal Co. is drawing plans for the erection of a 1-story coal plant addition.

SOUTH BOSTON, MASS.—Work has been started by the Gillette Safety Razor Co. on the erection of a 1-story plant building, 75 x 100 feet.

SPRINGFIELD, MASS.—The Davitt Iron Foundry was damaged $100,000 by fire, mostly to the pattern room.

TAUNTON, MASS.—The Magoe Furnace Co. has let the contract for a brick, 1-story 24 x 139-foot factory.

WORCESTER, MASS.—The Wright Machine Co. has been incorporated to build machinery with $250,000 capital by George M. Wright, J. Verner Critchley, George B. Cunningham and Archibald R. Lemieux.

DETROIT—The Great Western Smelting & Refining Co. contemplates the erection of a plant addition.

DETROIT—The Sand Lime Brick Co., 1008 Vinton building, plans the erection of a plant to cost about $75,000.

GREENVILLE, MICH.—The Ranney Refrigerator Co. has awarded a contract for the erection of a plant building to be built at an estimated cost of $50,000.

LUDINGTON, MICH.—The Stearns Motor Mfg. Co. contemplates the erection of a 2-story factory addition, 50 x 150 feet.

AMPERE, N. J.—The Crocker-Wheeler Co., Fourth avenue, plans the erection of a 1-story power house addition.

BROOKLYN, N. Y.—The Municipal Improvement Corp., 32 Court street, plans the erection of a 1-story repair and machine shop, 80 x 190 feet.

CORNING, N. Y.—The Roulette Glass Co. contemplates the erection of a factory building.

NEW YORK—The Continental Can Co., 61 Broadway, is reported planning the erection of an addition to its plant at Jersey City, N. J.

NEW YORK—The A. C. Chesley Co., Inc., 704 East 133rd street, plans the erection of a 1-story plant addition, 130 x 200 feet.

NEW YORK—The Atlantic Industrial Alcohol Co., care of Floyd S. Corbin, 300 Madison avenue, has acquired a site for a plant at Tottenville, S. I.

DAYTON, O.—The Monarch Marking System Co., 216 South Torrence avenue, contemplates the erection of a 3-story factory building to be built at an estimated cost of $100,000.

WARREN, O.—The Packard Electric Co. plans the erection of a 3-story plant addition, 85 x 200 feet.

MYERSTOWN, PA.—Part of the plant of the Myerstown Foundry & Mfg. Co. recently was damaged by fire.

PHILADELPHIA—The Krout & Fite Mfg. Co. plans the erection of a 1-story power house.

PHILADELPHIA—The Chrome Products Co., Inc., Fuller building, is reported planning the purchase of quarrying machinery.

PITTSBURGH—H. L. Kreusler, 3301 Penn avenue, plans to establish a plant for the manufacture of concrete and cement blocks.

PITTSBURGH—Architect C. R. Geisler, Ferguson building, is preparing plans for the erection of a 1-story radiator repair shop, 30 x 35 feet, to be built at an estimated cost of $12,000. The name of the owner is being withheld for the present.

POTTSTOWN, PA.—Robert A. Feroe, manufacturer of paper boxes and containers, has started work on the erection of an addition to its plant.

PROVIDENCE, R. I.—Hamilton & Hamilton, Inc., has let a contract for the erection of a 1-story factory building, 50 x 200 feet.

PROVIDENCE, R. I.—The Textile-Finishing Machinery Co. is to erect a brick and steel, 1-story machine shop to cost $100,000.

WOONSOCKET, R. I.—The French Worsted Co. has let the contract for a brick, 1-story machine shop and connecting tunnel.

ELLSWORTH, WIS.—The Pittsburgh-Des Moines Bridge Co., Des Moines, Iowa, has been granted the contract to rebuild the present steel water tower and install a new 80,000-gallon tank, at a price of $5,488.

KENOSHA, WIS.—Plans have been completed by Architect John D. Chubb, 109 North Dearborn street, for a new high school, 250 x 250 feet, three stories high, costing $1,000,000, and a junior high and industrial training school, 175 x 250 feet, two stories with basement, costing $400,000. The board of education expects to take bids about Sept. 1. Ella F. Powers is secretary.

MADISON, WIS.—A public garage, with extensive shop space, and to cost $25,000, will

Warehouse Steel Prices

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.36c
Detroit	3.35c
Los Angeles	4.30c
New York	3.54c
Philadelphia	3.55c
Pittsburgh	3.15c
San Francisco	3.75c
Seattle	4.10c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.54c
Philadelphia	3.55c
St. Louis	3.35c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Los Angeles	4.40c
New York	3.64c
Philadelphia	3.65c
Pittsburgh	3.25c
San Francisco	3.60c
Seattle (large shapes)	4.20c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angles	3.65c
New York	3.64c
Philadelphia	3.65c
Philadelphia, 3/16-inch	3.95c
Pittsburgh	3.25c
San Francisco	3.75c
Seattle	4.25c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.615c
Buffalo	4.45c
Chicago	4.35c
Cincinnati	4.10c
Cleveland	3.75c to 4.06c
Detroit	4.30c
Los Angeles	5.20c
New York	4.59c
Philadelphia	4.25c
San Francisco	5.25c
Seattle	5.00c
St. Louis	4.45c
St. Paul	4.60c

NO. 28 BLACK SHEETS

Boston	5.45c
Buffalo	5.25c
Chicago	5.20c
Cincinnati	4.90c
Cleveland	4.65c
Detroit	5.15c
Los Angeles	6.50c
New York	5.15c
Philadelphia	5.15c
San Francisco	5.80c
Seattle	6.00c
St. Louis	5.30c
St. Paul	5.45c

NO. 28 GALVANIZED SHEETS

Boston	6.60c
Buffalo	6.35c
Chicago	6.35c
Cincinnati	5.90c
Cleveland	5.60c to 5.80c
Detroit	6.30c
Los Angeles	7.30c
New York	6.05c to 6.15c
Philadelphia	6.25c
San Francisco	6.50c
Seattle	7.00c
St. Louis	6.45c

BANDS

Boston	4.80c
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00c to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angeles	5.20c
New York	4.39c
Philadelphia	4.35c
Pittsburgh	3.95c
San Francisco	4.50c
Seattle	5.10c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider 20 gage and heavier	4.75c
Pittsburgh	3.95c
Seattle	5.50c
St. Paul	4.80c

COLD ROLLED STEEL

Boston (rounds)	4.75c
Boston (shapes)	5.25c
Buffalo (rounds)	4.70c
Buffalo (shapes)	5.20c
Chicago (rounds)	4.55c
Chicago (shapes)	5.05c
Cincinnati (rounds)	4.50c
Cincinnati (shapes)	5.00c
Cleveland (rounds)	4.25c
Cleveland (shapes)	4.75c
Detroit (rounds)	4.55c
Detroit (shapes)	5.05c
Los Angles (rounds)	5.90c
New York (rounds)	4.65c
New York (shapes)	5.15c
Philadelphia (rounds)	4.35c
Philadelphia (shapes)	4.85c
Pittsburgh	4.25c
San Francisco (rounds)	5.75c
Seattle (rounds)	6.00c
St. Paul (rounds)	4.55c

be erected at 2201-2205 University avenue by Joseph Fischwich. It will be 75 x 110 feet, two stories.

MADISON, WIS.—The steam heating plant for the $1,000,000 Hotel Lorraine being built here by Walter Schroeder and associates of Milwaukee, has been let to the Paul E. Mueller Co., Hanover and Park streets, Milwaukee. The cost is in excess of $90,000.

MADISON, WIS.—Bids close Aug. 20 in the office of M. E. McCaffrey, secretary of the board of regents, University of Wisconsin, for the complete water softener installation and the refrigerating unit of the $750,000 Wisconsin general hospital and college of medicine here.

MILWAUKEE—The Milwaukee Coke & Gas Co. contemplates the erection of a plant building.

MILWAUKEE.—R. T. Rutzen will build a brick and frame pattern shop, 50 x 60 feet, at 1103 Forty-eighth street, at a cost of about $15,000.

MILWAUKEE—Bids are being taken until Aug. 3 by the city purchasing department for two 200-gallon sump pumps for the Riverside pumping station.

MILWAUKEE—The Universal Clothes Presser Mfg. Co. has been incorporated with $25,000 capital stock to manufacture special machinery, by W. H. Dick, Jacob H. Weishan and others.

MILWAUKEE—Architect Frank Howend, Mack block, is drawing plans for a 1-story machine shop, 50 x 100 feet, at 1524 Galena street, for a firm known as "Jim's Repair Shop," now in leased quarters nearby.

MILWAUKEE—A brick and concrete machine shop, 43 x 60 feet, will be built at 1281 Twenty-eighth street by Charles Schott, who has enlarged his business into the Chas. Schott Machine Co.

MILWAUKEE—The Milwaukee Tank Works will build an assembly room addition, 80 x 115 feet. The general contractor on building and machinery is Otto Randolph, 53 West Jackson boulevard, Chicago.

MILWAUKEE—Articles of incorporation have been filed by the Weeks Stafull Co., capital stock $10,000, which will manufacture automobile devices invented and patented by Elling O. Weeks, 957 Forty-fourth street.

MILWAUKEE—The Parelskin & Grodin Co., dealers in all kinds of shop and factory equipment at 413 Sixth street, have incorporated under the same name, with $15,000 capital. S. N. Parelskin and William Grodin remain the principal owners.

MILWAUKEE.—F. M. Harbach, secretary, board of education, 1001 Prairie street, is asking bids until Aug. 30 for the complete installation of water purification systems for the swimming pools in the new Washington and Bay View schools.

MILWAUKEE.—A new machine shop, 60 x 85 feet, will be built at Market street and Ogden avenue, by William Hyink & Sons, machinists, now situated at 727 North Walter street. The general contract has been let to Paul Nagtegaal.

MILWAUKEE.—Architects Voelz & Siebert, 373 Broadway, are making plans for a 1-story fireproof garage and repair shop, 45 x 115 feet, to be built at Eighth avenue and Mitchell street. The name of the owner will be given out later.

MILWAUKEE—A charter has been granted to the Machinery Supply & Equipment Co., temporary offices, 800 Trust Co. building, to buy, sell, manufacture and repair machinery, tools, saws, knives, cutters, etc. E. V. Malloy, H. W. Connell and Herman E. Friedrich are the incorporators.

MILWAUKEE—A $25,000 garage and repair-shop, 60 x 150 feet, will be erected at 1143 Third street, by George T. Stehling, of Chas. H. Stehling & Sons Co., tanning and leather machinery, 401-405 Fourth street. P. E. Schaefer of the Stehling company is handling the work as consulting and contracting engineer.

MILWAUKEE—The Dahlman Construction Co. has the general contract to build the power plant unit, 65 x 84 feet, of the new plant of the Pittsburgh Plate Glass Co. here. The first building, costing $650,000, is completed and work will begin soon on the second structure of equal size. The plant houses the

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago** **Detroit**
San Francisco
Cincinnati

Business Changes Recently Announced

OPENING of an office in the Rose building, Cleveland, has been announced by the Standard Inspection Co., which maintains offices in New York, Pittsburgh and Chicago. The company does a general inspection business serving architects, engineers, contractors and manufacturers.

* * *

The Oilgear Co., Milwaukee, has appointed the E. A. Kinsey Co., 235 South Meridian street, Indianapolis, its selling agent in the states of Indiana, Kentucky and Tennessee.

* * *

Uehling Instrument Co., Paterson, N. J., has appointed three new southern representatives, namely Connor-Hudson Co., Southwestern Life building, Dallas, Tex.; Gibbens & Gordon Inc., 532 Canal street, New Orleans; and the Cornell Mathews Co. 10 Oak street, Orlando, Fla.

* * *

The C. & G. Cooper Co. and allied companies the Chapman Engineering Co. and the Chapman-Stein Furnace Co., are discontinuing both their New York and Pittsburgh branch offices. In recent years so much of their work has involved an engineering service that they find they can respond to requests for quotations and special service much more quickly when these requests are sent direct to the home office at Mt. Vernon, O.

Patton-Pitcairn paint and varnish divisions.

NEENAH, WIS.—Architect John D. Chubb, 109 North Dearborn street, Chicago, is drawing plans for the Neenah high school, to cost $500,000. The building will be 224 x 265 feet, two and three stories, with full basement and steam heating system. Plans will be ready for bidders about Sept. 1. George Burnside is secretary of the board of education.

NEW HOLSTEIN, WIS.—At a special election a bond issue of $130,000 was authorized for the construction of complete water works and sewerage systems, work to begin early next spring. The city recently built a municipal light system, deriving current from a private utility over high voltage transmission lines.

NEW LONDON, WIS.—Two public garages, with repair shops, will be built here by F. Scheonrock & Sons, local contractors. One will be for Milo Smith and will be 30 x 120 feet. The other is for the New London Motor Co. and is 60 x 120 feet. Foundations are being laid.

NORTH MILWAUKEE, WIS.—The Milwaukee Electric Railway & Light Co. will built a 2-story substation, 35 x 63 feet, at a cost of $45,000. Bids are being taken by Fred Luber, company architect.

PORT WASHINGTON, WIS. — Schmitt Bros. have let contracts for a $15,000 garage addition which will be used largely for the service department.

PRAIRIE DU CHIEN, WIS.—The Prairie du Chien Mfg. Co. has been incorporated for $25,000 to manufacture a phonographic lamp, combining an illuminating fixture with a talking machine, providing also for radio apparatus. J. H. Frazer, W. D. Cowall and H. E. Seipp are the incorporators.

PRAIRIE DU SAC, WIS.—A $20,000 garage and repair shop, 50 x 147 feet, will be erected here by the J. J. Schmist Motor Car Co. Work will start Aug. 25.

RACINE, WIS.—Michael Hammes and L. J. Borman are equipping a shop for the production of automobile headlight deflecting devices. The business will be conducted as a partnership styled the Racine Deflector Co.

SHEBOYGAN, WIS.—The Bemis Riddell Fibre Co. plans the erection of a 4-story factory addition, 65 x 140 feet.

SHULLSBURG, WIS.—The Imperial Lead & Zinc Mining Co. has been incorporated here with $50,000 capital stock by C. T. Chapin, F. W. Duncan and H. C. Lutmann.

STEVENS POINT, WIS.—The board of industrial education is in the market for equipment for a sheet metal shop, which will be the first course to be established in the new vocational training school now being completed and to be opened Sept. 4. A printing course will also be opened at that time.

WEST ALLIS, WIS.—Mark Bros., 7501 Summitt avenue, contemplate a factory building.

West of the Mississippi

MASON CITY, IOWA—J. E. Decker & Sons plan the erection of a 1-story machine shop, 75 x 100 feet, to be built at an estimated cost of $45,000.

Composite Market Record

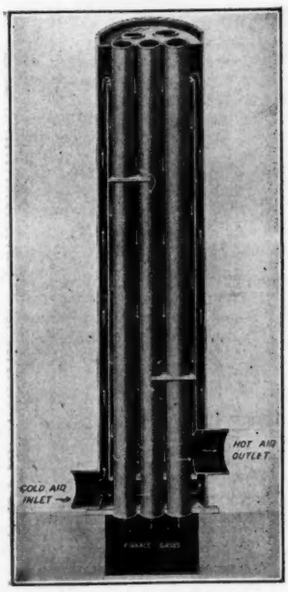
Monthly Averages of Fourteen Iron and Steel Products, 1913-1923, Compiled by Iron Trade Review

1923	
July 4	$45.72
Average for June	46.46
June 27	46.16
June 20	46.34
June 13	46.53
June 6	46.79
Average for May	47.52
May 29	47.26
May 16	47.48
May 9	47.70
May 2	47.70
April	47.01
March	45.31
February	42.61
January	41.17
1922	
December	40.53
November	42.08
October	43.60
September	43.79
August	39.79
July	37.50
June	36.96
May	36.49
April	34.42
March	32.97
February	32.86
January	33.35
Average for year	37.86
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year.	40.74
1920	
December	54.04
November	63.75
October	68.61
September	69.28
August	68.93
July	68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year.	65.59
1919	
December	54.88
November	51.28
October	48.76
September	48.35
August	48.27
July	47.86
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year.	50.32
1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year.	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year.	70.10
1916	
December	$53.68
November	46.77
October	41.50
September	39.97
August	39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year.	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year.	24.76
1914	
December	$21.58
November	23.39
October	22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year.	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year.	26.32

Now, it's 50-50!

Heretofore a *gas furnace* has been unable to compete with an *oil furnace* because of the difference in the cost of fuel.

Calorized
Recuperators
have made the Gas Furnace a real competitor of the Oil Furnace, by greatly reducing the consumption of gas.



A large Gas Company in Michigan has asked us to educate their sales force along heat recuperative lines, because they realize that the Calorized Recuperator is the open gate to a greatly enlarged field for their product.

The Calorized Recuperator simply and positively retrieves the greater part of heat that heretofore has gone up the flue—and puts it to work to heat the air that is burnt with the fuel. By feeding the air to the combustion chamber at a high heat, Calorized Recuperators greatly reduce the amount of gas that is necessary to maintain the proper furnace temperature.

The coupon, below, will bring full details. Mail it to us now.

THE CALORIZING COMPANY

General Offices: Oliver Bldg., Pittsburgh, Pa.

50 Church St.
New York, N. Y.

224 S. Michigan, Ave.
Chicago, Ill.

424 West Bldg.
Houston, Tex.

2-220 General Motors Bldg.
Detroit, Mich.

720 Commerce Trust Bldg.
Kansas City, Mo.

CALORIZING

What it is:—

Calorizing is a process, patented by the General Electric Co., in which aluminum is driven into steel tubes so as to form aluminum alloy surfaces. Tubes so treated will successfully withstand high temperatures.

A Calorized Recuperator can be readily applied to the great majority of furnaces, large or small, old or new.

Clip this coupon

Information which will enable me to determine the fuel I can save with a Calorized Recuperator interests me.

Name:_____ Position:_____

Company Name:_____

Address:_____

Business in Canada

BRANTFORD, ONT.—The carriage factory of Adam Spence & Sons was damaged by fire recently.

CAMPBELLFORD, ONT.—The Sinclair Construction Co., Ltd., Excelsior Life building, Toronto, Ont., has the general contract for the construction of a power house, foundations and tailrace at dam No. 1, Trent river, in connection with the $250,000 development here for the Hydro Electric Power commission of Ontario, University avenue, Toronto.

FORD CITY, ONT.—Wells & Gray, Ltd., have been awarded the general contract for erection of a heat treating building here to

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Mesabi Bessemer, 55 per cent iron	6.20
Old Range nonbessemer, 51½ per cent iron	5.70
Mesabi nonbessemer, 51½ per cent iron	5.55

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent	10.00 to 11.00
Copper free low phosphorus 53 to 65 per cent	13.25 to 16.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.50
Algerian low phosphorus, 52 to 54 per cent	10.00 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent	nominal
Swedish foundry or basic, 66 to 68 per cent	10.50 to 10.75
Spanish foundry or basic, 50 to 54 per cent	8.00 to 9.50

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent	nominal
Indian, minimum 47 per cent	(nominal) 40 to 42 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent	43¾ cents c.i.f. tidewater

Fluor Spar

85 and 5% grade

Washed gravel, Kentucky and Illinois mines, per net ton	$20.00 to $23.50
Washed gravel, imported, duty paid eastern tidewater, per net ton	$19.60 to 20.00

Rivets

Structural rivets, Pittsburgh	3.00c to 3.25c
Boiler rivets, Pittsburgh	3.10c to 3.35c
Rivets, 7/16-in. and smaller	65 and 10 to 65 and 5 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1⅛ inches inclusive)

Hot pressed square or hexagon blank	$3.75 off list
Hot pressed square or hexagon tapped	3.75 off list
Cold punched square or hexagon blank	3.75 off list
Cold punched, square or hexagon,	3.75 off list
Cold punched semifinished hexagon nuts ⅜-inch and larger	75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller	80 and 5 off

Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
(¾ x 6 inches, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread	50 and 10 off
Larger and longer	50 and 10 off

MACHINE BOLTS
(¾ x 4 inches, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread	50, 10 and 10 off
Larger and longer	50, 10 and 10 off

(¾ x 4 inches, cold punched nuts)

Cut thread	45 and 10 off
Larger and longer	45 and 10 off
Lag screws	60 off
Plow bolts Nos. 1, 2 and 3 heads	50 and 10 off
4 to 10 heads	50-10 + 20 off
Stove bolts	75, 10 and 5 off
Tap bolts	25 and 10 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45 and 10 off
Blank bolts	50, 10 and 10 off
Wrought washers	$5.00 to 5.25c off list
Rough stud bolts with nuts	50 and 10 off

WASHERS

Wrought washers	$5.00 to $5.25 off

Steel Pipe

(Effective April 19, 1923)
Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½
7 to 8-inch	21	7
9 to 12-inch	16	2
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	..

Wrought Iron Pipe

(Effective Jan. 23, 1923)
Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS

	Black	Galvanized
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap welded)
(Effective April 19, 1923)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch	51 off
1¼ and 1½-inch	43 off
1¾-inch	27 off
2 and 2¼-inch	18 off
2½ and 2¾-inch	28 off
3 and 3¼-inch	32 off
3½ and 3¾-inch	33 off
4-inch	37 off
4½ and 5-inch	29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch	34 off
3½ and 3¾-inch	35 off
4-inch	39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts

Carbon, 0.10 to 0.20 per cent	83 off
Carbon, 0.30 to 0.40 per cent	81 off
Carbon, 0.40 to 0.50 per cent	net price

Plus differentials and extras for cutting

SEAMLESS STEEL LOCOMOTIVE AND SUPER-HEATER TUBES
(Effective April 19, 1923)

Outside diameter	Net prices per foot, f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5½-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

SIVYER S CASTINGS
DEPENDABLE

Made clean and sound by intelligent molding methods

Before it was made in Sivyer Steel, the casting shown above dulled machining tools quickly because they encountered sand and slag in the surface on which they worked; in addition holes and pits were revealed after partial machining, so that rejections from this cause were high.

The manufacturer finally came to Sivyer with his problems.

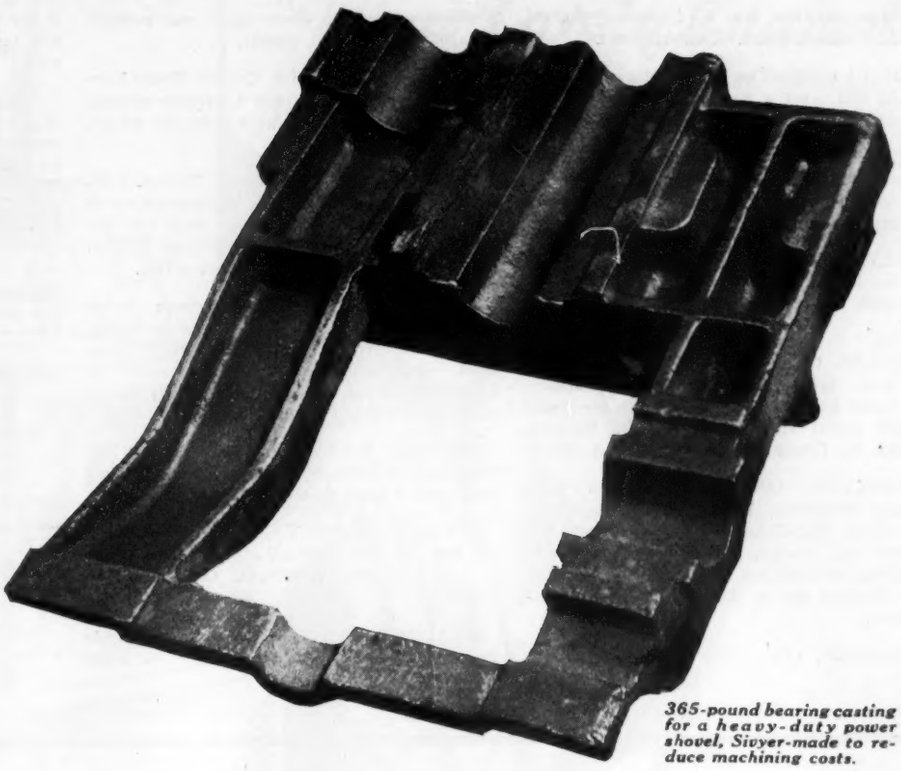
We found that the sand and slag in the machined surface were due to the pattern design and method of molding. A few simple changes, which enabled us to substitute, drag for cope and cope for drag, produced castings with clean, smooth surface, free from sand and slag.

To eliminate the holes and pits, we devised a new method of heading and gating.

The resulting castings did away with frequent sharpenings and replacements of tools. Their interior integrity eliminated the rejections formerly caused by holes and pits. And their generally superior quality shortened the machining time per casting by one hour.

Send Blue Prints

If your cost sheets, tools, or rejections indicate unduly high machining costs for some of your steel parts, whether castings or forgings, send us your blue prints with an explanation of your difficulties. We will study the problems involved and recommend possible solutions without obligation on your part.



365-pound bearing casting for a heavy-duty power shovel, Sivyer-made to reduce machining costs.

When Dull Tools Recommend Better Castings

CERTAIN planing and boring tools in the plant of a manufacturer of mining machinery required an unusual amount of grinding and replacement. Sand and slag on the surface of a certain transmission casting dulled them rapidly. The entire machining cost was investigated and proved to be unduly high. The manufacturer's usual sources of supply could not get rid of the trouble; so he came to Sivyer. The Sivyer castings eliminated the unusual wear on the tools and cut machining time per casting by one hour. Tools are keen inspectors of castings and originate many of the orders that come to Sivyer from more than a thousand miles away.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

cost $200,000 for the Ford Motor Co. of Canada. Albert Khan, Ltd., architect.

FORD, ONT.—The Ford Motor Co. of Canada will erect a by-products plant here to cost $200,000. A. Kahn, Ltd., is architect.

FT. ERIE, ONT.—The Campbell-Alladin Gas Maker, Ltd., has been incorporated with $250,000 capital stock by Frank M. Campbell, William E. Hunt and John L. Comfort.

GALT, ONT.—The Ever-Ready Auto Top Co. has leased a building here and will install equipment for the manufacture of automobile tops.

GUELPH, ONT.—The Guelph Specialty Mfg. Co., Ltd., has been incorporated to manufacture bottle holders, tools, specialties, etc., with $40,000 capital stock; by Alvin R. Burrows, William E. Lemon, Frank Wylde and others.

KINGSTON, ONT.—The Canadian Non-Exhaust Pneumatic Machinery Co., a subsidiary of the Non-Exhaust Compressed Air Machinery Co., Boston, Mass., is reported contemplating establishing a plant here. A. Rawson, Montreal street, Kingston, is local representative.

SWANSEA, ONT.—The Toronto Brick Co., Windermere avenue, whose plant was recently damaged by fire, will rebuild.

TORONTO, ONT.—The Ontario Hydro Electric Power commission, 190 University avenue, will build an addition to its transformer station on Davenport road.

TORONTO, ONT.—William C. Wilson, Ltd., has been incorporated to manufacture ship chandlers' supplies, tools, etc., with $100,000 capital stock; by William C. Wilson, Richard Storrar, William L. Coulthard and others.

TORONTO, ONT.—The Farrfhern Steam Service, Ltd., has been incorporated to manufacture and deal in steam power plant equipment, etc., with $40,000 capital stock; by Joseph E. Farrell, Arthur W. Roebuck, Ernest A. F. Newson and others.

WESTON, ONT.—The Brooks Steam Motors, Ltd., Toronto, Ont., is contemplating the erection of a plant here.

WOODSTOCK, ONT.—The Woodstock Paper Box Co. will build an addition to its plant to cost $150,000. J. Evans, Galt, Ont., is architect.

MEAFORD, ONT.—The Hydro Electric Power commission plans to purchase the plant of the Georgian Bay Power & Milling Co. and will install considerable new equipment in the plant.

ASBESTOS, QUE.—The Canadian Johns-Manville Co., Ltd., has awarded the general contract to H. Levasseur, Victoriaville, Que., for plant here.

HULL, QUE.—The Ottawa & Hull Power Co., Ltd., has been incorporated to build and operate electrical power development plants, etc., with $1,625,000 capital stock, by Edgar R. Parkins, Howard S. Dunn, Reginald H. Dean and others, all of Montreal, Que.

JONQUIERE, QUE.—The town council will build an addition to its hydroelectric plant here to cost $75,000.

MONTREAL, QUE.—The Ottawa River Power Co., Ltd., 145 St. James street, plans a power development project and is in the market for machinery and equipment including transmission and power machinery.

HULL, QUE.—The Lion Mead Rubber Co. is installing new equipment in a plant.

MONTREAL, QUE.—The Berliner Gramaphone Co. will require equipment for a new factory building.

New Trade Publications

INDUCTION FURNACES.—An illustrated 6-page catalog on induction furnaces has been published by the Ajax Electrothermic Corp., of Trenton, N. J. Stationary portable types are described.

UNIFLOW BOILERS.—The Lebanon Boiler Works, Philadelphia, has issued a 24-page illustrated bulletin in which uniflow boilers are described. Safety, compactness, accessibility, etc., of the boilers is pointed out and horsepower ratings as well as other data given.

PINION GEAR.—A one-tooth pinion gear developed by the Farrel Machine & Foundry Co., of Buffalo is described in an interesting manner in a booklet recently published by that company. A double helical gear box for machine tools also is described.

TRAVELING GRATE STOKER—The Combustion Engineering Corp., New York, recently has published an 8-page illustrated pamphlet describing briefly the history, construction, and operation of the traveling grate stoker. A table giving operating data is included.

FORCE FEED OILERS.—A 20-page illustrated catalog issued by the Detroit Lubricator Co., Detroit, points out the advantages of forced feed lubrication. The booklet describes in particular a new valveless model with a sight feed, which is operated automatically.

FUEL TESTING.—The value of accurate testing of fuel is emphasized in a circular published by the Pittsburgh Testing Laboratory, Pittsburgh. The proper method of preparing a sample of coal or coke by hand is told in a comprehensible manner by means of illustrations and accompanying directions.

ELECTRIC HOISTS—The Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. is circulating a 68-page illustrated catalog, which points out the many and varied uses of the electric hoist. Illustrations showing cranes in use in different industries and details of construction are included in the booklet.

PIANO PLATE.—The American Piano Plate Co., Racine, Wis., has published a 15-page illustrated booklet containing a brief outline of the development of the piano, as well as the process of manufacture of piano plates. The booklet contains a number of illustrations in which the manufacture of these plates is shown.

CONVEYOR FEED STOKER—General and detailed information regarding the design, construction and operation of a stoker is presented in a 16-page illustrated pamphlet just issued by the Laclede-Christy Clay Products Co., St. Louis. A smaller circular gives the results of an experiment in which eastern bituminous coal was burned in one of these stokers.

PROTECTIVE PAINT.—The Eagle Picher Lead Co., Chicago, is circulating a folder on lead paint, giving the results of a 6-year test of this product. Advantages attributed to this paint are saving of time and labor, protection against corrosion, comparatively rapid drying and freedom from hardening in the container.

POLYPHASE INDUCTION MOTORS—A 15-page bulletin recently has been issued by the Allis-Chalmers Mfg. Co., Milwaukee, describing the mechanical and electrical construction of squirrel-cage and slip-ring induction motors. Illustrations showing the control apparatus and the applications of the motors are included in the bulletin.

GAS PRODUCERS—The Smith Gas Engineering Co., Dayton, O., has published a 35-page bulletin which classifies gas producers, describes the fuels available, and outlines the principles of operation. The various steps in the manufacture of producer gas are explained by means of sketches and photographs. The possible uses of the gas are discussed.

STEEL FIRE SLIDE—The Dow Co., Louisville, Ky., has issued an illustrated folder describing a type of fire escape suitable for factories and public buildings. It consists of a vertical cylinder made of No. 12 gage sheet steel for the first 18 inches, the next 6 feet of No. 14 gage and the remainder of No. 16. The interior consists of a spiral slide attached to a 3-inch inside diameter standard black pipe.

MECHANICAL OIL BURNER—A 40-page catalog has been published by the Bethlehem Shipbuilding Corp., Ltd., Bethlehem, Pa., describing in a comprehensive manner the operation of an oil burning system and showing the various parts of burners, furnace fronts, heaters, strainers, pumps, etc. Four tables are given in connection with the instructions for operation of the burners.

CONDUITS.—The Crouse-Hinds Co., Syracuse, N. Y., has issued a 4-page bulletin in which the difficulties experienced with large conductors where bends are incorporated in the conduit system are pointed out. The bulletin goes into some detail regarding the company's line of conduits, which, it is claimed, counteract these difficulties. Sizes of cover openings of the different types are given.

RIVETS—The S. Severance Mfg. Co., Glassport, Pa., has issued a supplement to its data book, "Rivets," which was published three years ago. Manufacturing, cutting, and painting of rivets is discussed with regard to dies, production requirements, etc. The results of investigations on the effect of riveting on steel plate and the presence of sulphur in rivet steel are presented together with information regarding the use of electric rivet heaters.

"What Lovely Enamel!"

" Yes, Madame!—and it will last, too—because its base is of WABIK Metal."

WABIK METAL

SHEET
BARS
INGOTS

A Special Material Specially Treated for Vitreous Enameling

Like other Mansfield Products, as listed below, WABIK METAL SHEETS are rolled from our own special "BOTTOM-POURED" INGOTS.

AUTOMOBILE SHEETS—Body Stock; Flat Fender and Hood Stock; Cowl Stock; Radiator Casing Stock; Crown Fender Stock.

METAL FURNITURE SHEETS, ALSO PICKLED AND ANNEALED ENAMELING STOCK for Kitchen Utensils.

MILK CAN STOCK.

You can place the utmost confidence in Mansfield products. They are the result of a constant study of the needs of users —and we have spared no effort to meet those needs in the best possible way.

May we serve you?

The Mansfield Sheet and Tin Plate Co.

Mansfield, Ohio

DISTRICT SALES REPRESENTATIVES

The L. D. Rockwell Co., 1106 National City Bank Bldg., New York, N. Y.
Mr. D. B. Coey, 1018 Standard Oil Building, Chicago, Ill.
Mr. Geo. W. House, 1822 Ford Building, Detroit, Mich.
The L. D. Rockwell Co., 1512 B. F. Keith Bldg., Cleveland, Ohio
The Maynard French Steel Co., 516 Mercantile Library Bldg., Cin., O.
Walter G. Clark, Inc., 215-17 Chestnut St., St. Louis, Mo.
Walter G. Clark, Inc., 1317-19 St. Louis Ave., Kansas City, Mo.
Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.
N. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.
Mr. Herbert P. Hill, 401 Continental Trust Bldg., Washington, D. C.
Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.
Wm. P. Horn Co., 301 Kerchoff Bldg., Los Angeles, Cal.
Wm. P. Horn Co., Dekum Building, Portland, Ore.
Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seattle, Wash.
Mr. Edwin Schofield, 45 Jarvis St., Toronto, Ont., Canada.

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	15.00 to 15.50
Boston (dealers)	11.50 to 12.00
Buffalo	17.00 to 18.00
Chicago	15.75 to 16.25
Cleveland	15.50 to 16.00
Cincinnati	14.00 to 14.50
Detroit (dealers)	13.50 to 14.00
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.50 to 13.00
Pittsburgh (dealers)	18.50 to 19.00
St. Louis	16.00 to 16.50
Valleys (nominal)	18.00
No. 1 railroad steel New York (dealers)	12.50 to 13.00

BUNDLED SHEETS

Buffalo	$15.00 to 15.50
Cleveland	9.50 to 10.00
Cincinnati	11.50 to 12.00
Detroit	9.00 to 9.50
Eastern Pennsylvania	13.50 to 14.00
Pittsburgh	15.00 to 15.50
St. Louis	8.00 to 8.50
Valleys	14.00 to 14.25

STEEL RAILS, SHORT

Birmingham	17.00 to 17.50
Boston (dealers)	11.50 to 12.00
Chicago	19.50 to 20.00
Cincinnati	19.50 to 20.00
Cleveland	15.00 to 15.50
St. Louis	17.50 to 18.00

STOVE PLATE

Birmingham	15.00 to 16.00
Boston	16.50 to 17.00
Buffalo	17.00 to 17.50
Chicago	16.50 to 17.00
Cincinnati (net tons)	9.50 to 10.00
Cleveland	12.50 to 12.75
Detroit (net ton) (dealers)	12.50 to 13.50
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	13.00 to 13.50
Pittsburgh	15.00 to 15.50
St. Louis	15.50 to 16.00

LOW PHOSPHORUS

Buffalo	23.50 to 24.50
Cincinnati	15.00 to 15.50
Eastern Pennsylvania	22.50 to 23.00
Pitts. billets and bloom crops	23.00 to 24.00

SHOVELING STEEL

Chicago	15.50 to 16.00
Pittsburgh	14.50 to 15.00
St. Louis	16.00 to 16.50

KNUCKLES, COUPLERS & SPRINGS

Chicago	21.00 to 21.50
Eastern Pennsylvania	20.00 to 21.00
Pittsburgh	21.50 to 22.00
St. Louis	20.50 to 21.00

COMPRESSED SHEETS

Buffalo	15.00 to 16.00
Chicago	13.00 to 13.50
Cleveland	12.75 to 13.25
Detroit (dealers)	12.00 to 12.50
Pittsburgh	17.00 to 17.50
Valleys	16.75 to 17.00

FROGS, SWITCHES, GUARDS

Chicago	16.00 to 16.50
Eastern Pennsylvania	15.50 to 16.50
St. Louis	16.50 to 17.00

BOILER PLATE, CUT

St. Louis	11.50 to 12.00

ANGLE BARS—STEEL

Chicago	16.75 to 17.25
St. Louis	17.00 to 17.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	14.50 to 15.00
Boston (dealers)	14.00 to 14.50
Buffalo	15.00 to 16.00
Chicago, No. 1	15.50 to 16.00
Chicago, No. 2	16.75 to 17.00
Cincinnati No. 1	13.00 to 13.50
Detroit, No. 2	12.50 to 13.00
Eastern Pennsylvania	17.50 to 18.50
Pittsburgh, No. 1	16.00 to 16.50
Pittsburgh, No. 2	18.50 to 19.00
New York, No. 1 (dealers)	15.50 to 16.50
St. Louis, No. 1	16.25 to 16.75
St. Louis, No. 2	16.50 to 17.00

WROUGHT PIPE

Boston (dealers)	9.50 to 10.00
Buffalo	14.00 to 15.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.00 to 10.50

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.50 to 17.50

CITY WROUGHT

New York, long	14.00 to 14.50

BUSHELING

Buffalo, No. 1	15.50 to 16.00
Chicago, No. 1	14.50 to 15.00
Chicago, No. 2	12.00 to 12.50
Cincinnati No. 1	10.50 to 11.00
Cleveland, No. 1	10.00 to 10.25
Cleveland, No. 2	8.00 to 9.00
Detroit, No. 1	11.00 to 11.50
Detroit, No. 2 (new)	10.00 to 10.50
Detroit, No. 2 (old)	8.00 to 8.50
Eastern Pennsylvania	16.00 to 17.00
Pittsburgh, No. 1	16.00 to 16.50
St. Louis No. 1	16.00 to 16.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (dealers)	9.00 to 9.50
Buffalo	8.00 to 9.00
Chicago	9.75 to 10.00
Cleveland	9.50 to 10.00
Cincinnati (net tons)	8.50 to 9.00
Detroit (dealers)	8.00 to 8.50
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.50 to 10.00
Pittsburgh	12.00 to 12.50
St. Louis	8.00 to 8.50
Valleys	11.00 to 11.25

CAST IRON BORINGS

Birmingham (chemical)	16.50 to 17.00
Birmingham (plain)	9.00 to 10.00
Boston (chemical)	12.50 to 13.00
Boston (dealers)	10.00 to 10.50
Buffalo	14.00 to 14.50
Pittsburgh	15.00 to 15.50
Chicago	11.50 to 12.00
Cincinnati (net tons)	9.00 to 9.50
Cleveland	11.50 to 11.75
Detroit (dealers)	10.00 to 10.50
Eastern Pennsylvania	14.50 to 15.50
Eastern Pennsylvania (chem.)	17.00 to 19.00
New York (dealers' price)	10.50 to 11.00
St. Louis	13.50 to 14.00
Valleys	14.00 to 14.25

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	8.50 to 8.75
Cleveland	10.25 to 10.75
Detroit (dealers)	9.50 to 10.00
Eastern Pennsylvania	12.50 to 13.50
New York (dealers)	9.00 to 10.00

IRON AXLES

Birmingham	24.00 to 25.00
Boston (consumers)	31.00 to 32.00
Buffalo	28.00
Chicago	27.00 to 27.50
Cincinnati	21.50 to 22.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	27.00 to 28.00
St. Louis	27.00 to 27.50

IRON RAILS

Buffalo	20.00 to 21.00
Chicago	21.50 to 22.00
Cincinnati	13.00 to 13.50
St. Louis	16.00 to 16.50

PIPES AND FLUES

Chicago	10.50 to 11.00
Cincinnati	9.50 to 10.00
Cleveland	8.00 to 9.00
St. Louis	11.00 to 11.50

RAILROAD GRATE BARS

Buffalo	17.00 to 17.50
Chicago	14.50 to 15.00
Cleveland	12.50 to 12.75
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	13.00 to 13.50
St. Louis	14.50 to 15.00

FORGE FLASHINGS

Boston (dealers)	9.50 to 10.00
Chicago, small	11.50 to 12.00
Cleveland, small	10.25 to 10.75
Cleveland, large	10.00 to 10.50
Detroit (dealers)	10.00 to 10.50

FORGE SCRAP

Boston (dealers)	8.75 to 9.25
Chicago	19.00 to 19.50
Eastern Pennsylvania	13.50 to 14.50

ARCH BARS AND TRANSOMS

Chicago	25.50 to 26.00
St. Louis	22.50 to 23.00

ANGLE BARS—IRON

Chicago	26.00 to 26.50
St. Louis	24.00 to 24.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	11.00 to 11.50
Buffalo	17.00 to 18.00
Chicago	12.50 to 13.00
Cleveland	13.75 to 14.00
Eastern Pennsylvania	13.50 to 14.50
Pittsburgh	15.00 to 15.50
St. Louis	14.00 to 14.50

STEEL CAR AXLES

Birmingham	20.00 to 21.00
Boston (consumers)	22.00 to 23.00
Buffalo	24.50 to 25.50
Chicago	19.00 to 20.00
Cleveland	20.00 to 20.50
Eastern Pennsylvania	20.00 to 21.00
New York (dealers)	nominal
Pittsburgh	20.00 to 20.50
St. Louis	21.00 to 21.50

SHAFTING

Boston (consumers)	22.00 to 23.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	21.00 to 22.00
New York (dealers)	18.50 to 19.00
St. Louis	22.50 to 23.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	18.50 to 19.00
Birmingham, iron	18.00 to 18.50
Boston (consumers)	22.00 to 23.00
Buffalo, iron	16.50 to 17.50
Chicago, iron	19.50 to 20.00
Cincinnati	14.50 to 15.00
Eastern Pennsylvania	20.00 to 21.00
New York iron (dealers)	17.00 to 18.00
Pittsburgh, iron	19.50 to 20.00
Pittsburgh, steel	21.50 to 22.00
St. Louis, iron	18.50 to 19.00

NO. 1 CAST SCRAP

Birmingham, cupola	19.50 to 20.00
Boston (consumers)	22.50 to 23.00
Buffalo	19.50 to 20.50
Chicago, cupola	20.50 to 21.00
Cincinnati No. 1 machinery cupola (net tons)	19.50 to 20.00
Cleveland, cupola	18.50 to 19.00
Detroit (net ton) (dealers)	16.50 to 17.00
Eastern Pennsylvania, cupola	20.00 to 21.00
New York, cupola (dealers)	17.00 to 18.00
Pittsburgh, cupola	22.00 to 22.50
San Francisco	26.00 to 28.00
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	20.00 to 20.50
Valleys	20.00 to 20.50

HEAVY CAST

Boston (consumers)	20.00 to 21.00
Buffalo	16.00 to 17.00
Cleveland	13.00 to 13.25
Detroit (automobile) net ton	19.00 to 20.00
Eastern Pennsylvania	18.50 to 19.50
New York (dealers)	16.00 to 16.50
Pittsburgh	18.50 to 19.00

MALLEABLE

Boston (railroad) (consumers)	22.00 to 23.00
Buffalo	20.00 to 21.00
Chicago, railroad	20.50 to 21.00
Chicago, agricultural	18.00 to 19.00
Cincinnati, agricultural	15.00 to 16.00
Cincinnati, railroad	16.50 to 17.00
Cleveland, agricultural	19.00 to 19.50
Cleveland, railroad	20.00 to 21.00
Detroit (dealers)	19.00 to 20.00
Eastern Pennsylvania, railroad	17.00 to 17.50
Pittsburgh, railroad	20.50 to 21.00
St. Louis, agricultural	19.00 to 19.50
St. Louis, railroad	19.00 to 19.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.00 to 17.50
Boston (dealers)	14.00 to 14.50
Chicago	17.75 to 18.00
Cleveland	18.00 to 18.50
Detroit	13.50 to 14.00
Eastern Pennsylvania	17.50 to 18.00
New York (dealers)	17.50 to 18.50
Pittsburgh district	19.50 to 20.00
St. Louis	17.00 to 17.50

LOCOMOTIVE TIRES

Chicago	17.00 to 18.00
St. Louis	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	19.00 to 19.50
Eastern Pennsylvania	22.50 to 23.00
Pittsburgh	21.50 to 22.00

LOGEMANN

Double Ram Hydraulic

Scrap-Metal Presses

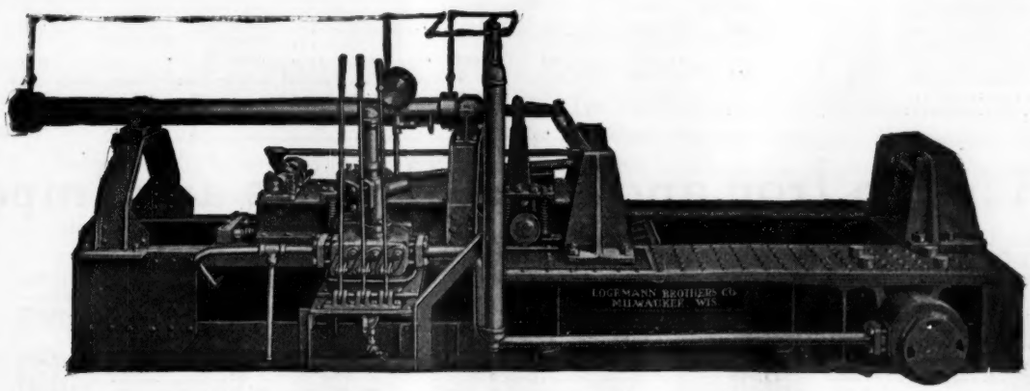
STANDARD

In Hundreds of Mills, Yards and Plants

Hydraulic-compressed scrap always commands the best prices. It is more conveniently stored—more economically handled—there is less loss from corrosion—less heat is required for remelting.

Loose Scrap is worth almost nothing.
Compare this with prices paid for "hydraulic-compressed."

LOGEMANN BROTHERS CO., 3126 Burleigh St. MILWAUKEE, WIS.



We build Balers for All Purposes

Hand-balers for waste-paper, power and hydraulic balers for the textile trades, hydraulic presses for metal and waste trades.

Also Hydraulic Shaft Straighteners, Etc.

European Iron and Steel Statistics

Gross Tons

Pig Iron Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912.	729,000	405,000	192,000	184,800
Monthly average 1913.	855,000	427,000	203,800	209,000
Monthly average 1919.	617,000	198,000	20,600	50,000
Monthly average 1920.	669,500	281,700	92,700	58,000
Monthly average 1921.	217,600	280,300	71,800	79,600
Monthly average 1922.	403,300	428,900	131,500	137,500
1922				
January	288,000	307,000	92,700	99,900
February	300,100	318,000	90,300	95,200
March	389,800	370,000	116,500	130,900
April	394,300	377,300	112,000	128,800
May	407,900	435,300	117,100	139,300
June	369,200	409,300	113,100	141,500
July	399,100	421,400	125,200	147,800
August	411,700	440,400	151,500	147,800
September	430,300	454,600	160,600	149,400
October	481,500	495,600	172,000	162,600
November	493,900	505,500	169,600	151,300
December	533,700	506,200	157,900	156,700
1923				
January	567,900	478,600	157,800	139,500
February	543,400	300,800	149,000	86,500
March	633,600	311,200	167,300	93,900
April	652,200	345,000	169,600	94,400
May	714,200	387,300	163,500	84,300
June	692,900	.....	169,300	88,400

Ingots and Castings Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912.	566,000	363,000	206,000	79,400
Monthly average 1913.	639,000	385,000	202,300	109,000
Monthly average 1919.	658,000	179,000	27,400	32,000
Monthly average 1920.	755,600	250,200	101,300	49,000
Monthly average 1921.	302,100	254,500	65,000	62,300
Monthly average 1922.	486,000	372,000	128,200	114,000
1922				
January	327,500	309,000	78,400	75,600
February	418,800	311,800	82,700	75,100
March	549,400	361,200	104,000	99,200
April	404,200	319,300	95,200	98,100
May	462,300	358,100	116,500	112,200
June	400,200	352,500	111,300	121,600
July	473,100	362,900	112,500	125,600
August	528,400	390,300	149,100	129,200
September	555,900	400,300	154,900	132,600
October	565,201	423,000	179,600	136,800
November	600,800	404,100	174,600	130,200
December	546,100	408,100	166,700	131,600
1923				
January	634,100	401,400	159,800	121,500
February	707,100	285,300	154,700	72,400
March	802,500	310,900	181,100	78,500
April	749,400	349,200	167,700	77,600
May	821,000	387,300	169,100	72,300
June	767,700	.....	186,000	73,200

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912.	166,400	16,400	87,000	27,300
Average monthly 1913.	185,900	12,900	68,900	25,000
Average monthly 1919.	42,400	113,100	44,400	.....
Average monthly 1920.	92,400	89,000	67,000	26,200
Average monthly 1921.	137,100	38,500	43,300	.....
Average monthly 1922.	73,500	64,300	42,000	499,000
1922				
January	88,700	36,600		68,200
February	64,600	55,800	139,000	66,900
March	63,800	67,300		105,700
April	59,900	89,100	32,400	129,000
May	60,900	41,100	62,400	154,300
June	52,800	73,200		137,700
July	55,900	54,800		182,900
August	80,100	40,300	129,700	181,800
September	70,600	50,000		175,000
October	90,600	109,200		233,800
November	79,800	58,500	140,000	186,700
December	114,000	109,500		239,600
1923				
January	128,900	55,800	45,100	191,300
February	122,700	63,800	40,000	82,500
March	111,000	38,000	35,200	93,200
April	115,400	44,200	32,800	143,900
May	82,200	37,000	.....	.....
June	105,100	.....	.....	.....

Exports

	United Kingdom	France	Belgium	Germany
Average monthly 1912.	400,600	41,500	124,500	482,400
Average monthly 1913.	414,100	48,200	128,800	516,900
Average monthly 1919.	186,100	19,400	14,500	.....
Average monthly 1920.	270,900	74,600	74,300	143,600
Average monthly 1921.	141,700	132,700	75,900	176,000
Average monthly 1922.	283,400	164,000	143,000	209,700
1922				
January	235,300	164,000		218,200
February	223,400	107,000	198,400	170,000
March	295,800	72,300		208,700
April	258,400	125,800	83,900	195,500
May	272,400	122,200	279,600	204,500
June	236,300	180,300		209,132
July	251,700	182,100		206,200
August	270,000	168,400	522,600	181,300
September	279,200	174,000		223,500
October	347,100	235,600		229,908
November	372,300	181,300	631,200	210,000
December	114,000	221,700		258,900
1923				
January	353,400	158,500	202,200	212,900
February	317,600	236,500	162,200	183,500
March	368,100	139,200	200,000	115,100
April	387,000	120,600	192,000	105,100
May	424,500	140,000	.....	.....
June	365,100	.....	.....	.....

Note—Belgian figures include Luxembourg since May 1, 1922.

Export and import figures do not include scrap.

American Iron and Steel Exports and Imports

Gross Tons

	Imports	Exports
1923		
June	67,968	176,523
May	75,840	195,535
April	77,894	183,905
March	106,050	168,176
February	67,682	135,046
January	119,955	134,441
1922		
December	96,358	154,087
November	152,250	124,004
October	184,202	131,542
September	76,393	128,370
August	49,054	144,264
July	62,426	157,027
June	39,154	216,298
May	23,098	229,616
April	18,720	197,562
March	12,774	206,474
February	11,535	133,333
January	13,404	155,962
Total	643,010	1,988,539
1921		
December	9,400	134,348
November	9,296	125,492
October	10,609	106,466
September	11,743	94,650
August	8,069	75,641
July	10,040	85,520
June	8,260	119,021
May	10,915	140,987
April	4,847	160,921
March	14,492	210,451
February	3,650	387,900
January	15,784	516,447
Total	117,105	2,156,818
1920		
December	15,120	499,780
November	50,995	434,290
October	39,797	451,972
September	31,825	408,605
August	58,335	431,519
July	32,742	419,230
June	40,549	392,780
May	29,125	419,064
April	29,681	395,583
March	38,377	426,448
February	36,491	308,128
January	45,796	333,514
Total	448,833	4,920,913
1919		
1919	327,490	4,405,281
1918	168,225	5,372,424
1917	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687